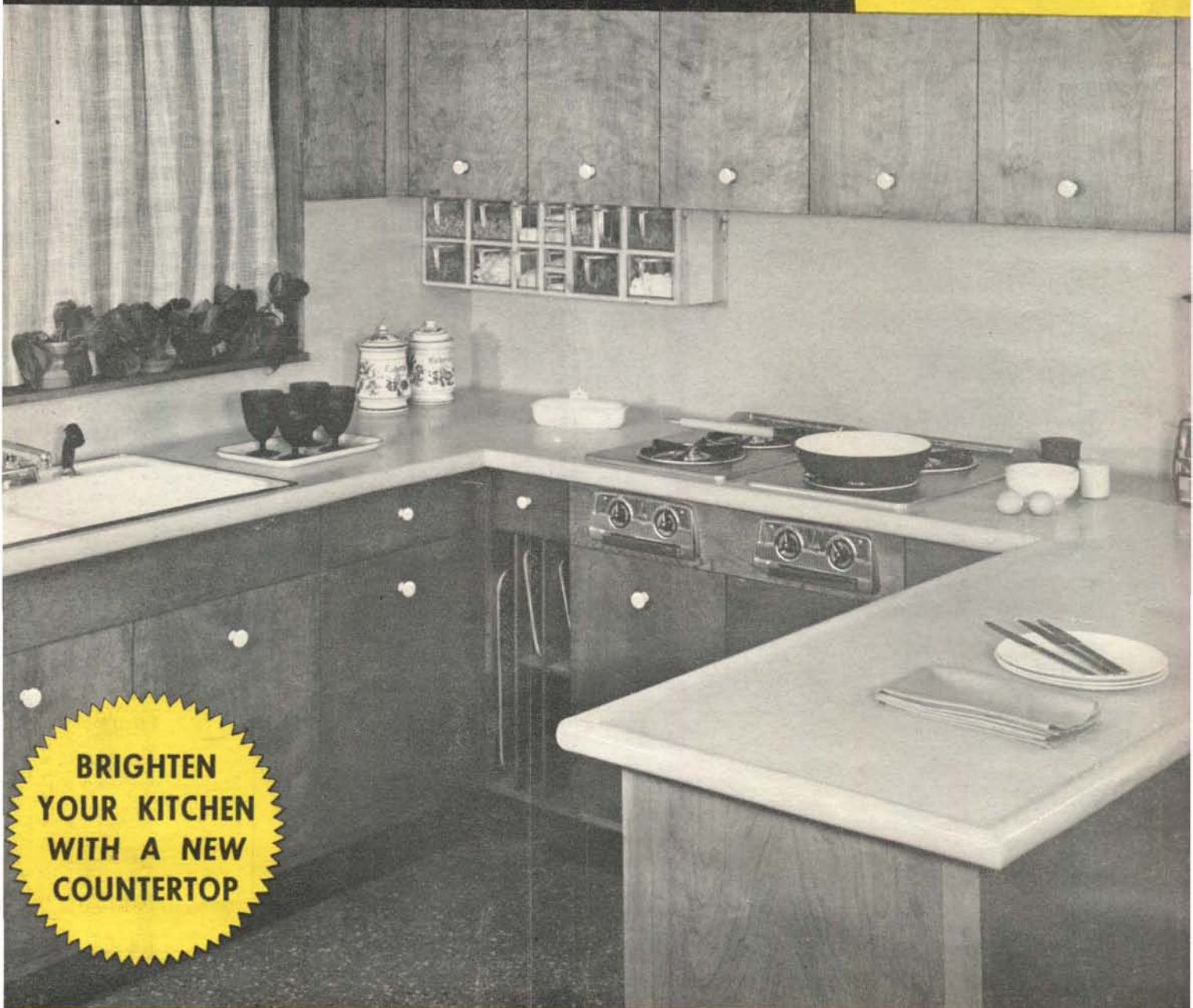


January-February, 1958

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He told me how a vitamin-mineral deficiency in my diet could bring on these symptoms—rob me of the joys of living... and suggested that I supplement my diet with pep-building vitamins and minerals. Thousands of others had found new energy, new youth, new happiness by adding these essential factors to their diet.

Well, I put off doing anything about my condi-

tion—until one day I read the Vitasafe ad in a magazine, offering a 30-day FREE supply of high-potency Vitasafe C.F. Capsules! I figured I had nothing to lose, so I mailed the coupon. When my free supply arrived, I began taking one Capsule a day. In a short time, I began to feel like a new man! My pep and vigor came back, I continued with the Vitasafe Plan—and I felt stronger—y younger—more energetic!

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*"Thirty days ago I turned
back the hands of time!"*

IF anybody told me that a little capsule could make me feel 10 years younger in just 30 days... full of pep, energy and happy well-being, I would have thought he was joking. I felt like so many people around me, just all tired out by the day-to-day pressure of modern life. I could hardly keep up with my work. Everything seemed an effort. My friends and family said I acted like an old lady.

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lives again—thanks to high-potency Vitasafe C. F. capsules.

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Now, I have the pep and healthy glow I last had years ago. And I enjoy my work, my family and friends more than I can ever remember.

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When you receive your free 30-day supply of vitamins, you are under no obligation to buy anything. With your vitamins you will also receive a handy postcard. If after taking your free Vitasafe capsules for three weeks you are not satisfied in every way, simply return the postcard and that will end the matter. Otherwise, it's up to us—you don't have to do a thing—and we will see that you get your monthly supplies of vitamins on time for as long as you wish, at the low, money-saving price of only \$2.78 per month.

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Glutamic Acid	50 mg.	Folic Acid	0.5 mg.
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Vitamin A	12,500 USP Units	Iron	30 mg.
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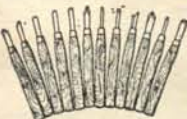
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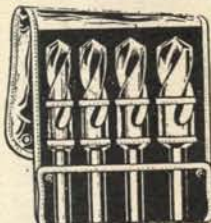
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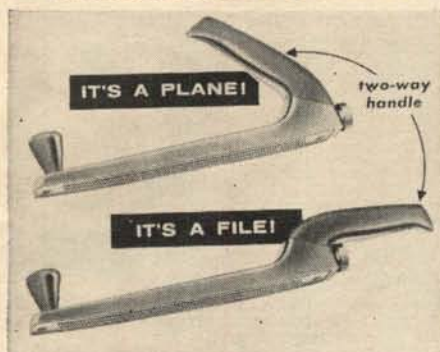
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keeping up with craft and home products

In communicating with companies whose products are described in this department, please mention **WORKBENCH**.

Combination File-Plane



MILLERS FALLS Company of Greenfield, Massachusetts, announces a unique new combination tool that makes it possible to plane, file, shape and smooth anything from soft wood to tough steel—all with a single tool, and at extremely low cost.

This new tool is named Plane-'R'-File, and it's loaded with exclusive features. First of all, it has an ingenious, two-way handle. In just a few seconds, it can be converted from a plane to a file and back again.

Coupled with this dual-purpose design is a patented blade manufactured for Millers Falls by the Tresa File Company of England. The first blade of its kind ever developed, it's the big secret of the Plane-'R'-File's extraordinary cutting power. Made of specially hardened steel, it has two rows of cutting teeth with edges almost glass hard. It cuts practically anything—wood, plastic, metals—and leaves a smooth, even surface no matter whether it's used with or across the grain. It's flexible and double-sided for double life—easily reversible to bring an entirely new cutting surface into action. It's replaceable, too, and inexpensive extra blades are available with either coarse or medium teeth. Body is die-cast aluminum.

Complete with coarse-toothed blade, the Plane-'R'-File sells for \$3.49 and is being distributed through hardware stores and retail lumber dealers. Replacement blades—coarse and medium—are priced at 98 cents.

Aluminum Protector

NORTHEAST LABORATORIES, Inc., Dorchester, Massachusetts, announces Aluma-Shield, a radically new development in coatings for aluminum products. A clear, water-white, long-life plastic coating, Aluma-Shield of-

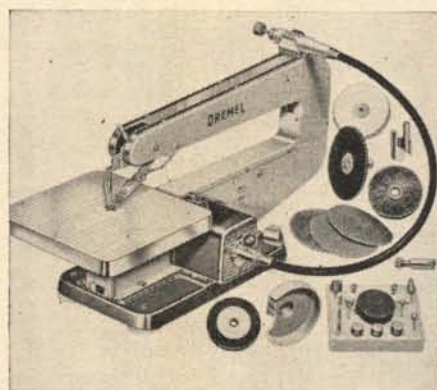
fers protection against weather extremes, salt spray, humidity, discoloration, corrosion, smudging, and abrasion.

Contained in a spray-top can, the new plastic coating sprays on smoothly and quickly—dries to a high gloss finish in ten to fifteen minutes. In marketing Aluma-Shield, Northeast Laboratories, Inc., guarantees its product against chipping, cracking or peeling.

Achieving quick acceptance with manufacturers of aluminum products, it is expected the new coating will find equal acceptance in the consumer market. Consumer applications include spray-coating Aluma-Shield on aluminum outdoor furniture, storm windows, doors, boats, airplanes, etc.

Postpaid price for Aluma-Shield in the 12-oz. can is \$1.98.

Multipurpose Tool



THERE WAS a time when electric power tools were considered stationary machines to be bolted to a workbench and then used only by the man of the house.

The Dremel Manufacturing Company of Racine, Wisconsin, has revolutionized this concept with the introduction of a new, multipurpose tool that's portable and so safe that the lady of the house and even the children can use it.

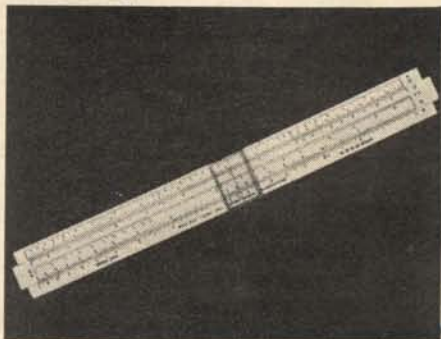
The new Dremel Model 57 Moto-Shop is a complete home workshop packed into one low cost, compact unit. It is powered by a ball bearing rotary motor embodying a unique power takeoff to which a number of attachments can be connected. From a 15" jig saw, it can quickly be converted into a disc sander, bench grinder, buffing wheel, and a flexible shaft machine.

These attachments have hundreds of home uses ranging from jig saw project work to disc sanding, sharpening knives, scissors, and other cutting tools, polishing silver, removing rust, etc. The flexible shaft is a complete machine shop in itself. It can be used for grinding, polishing, sharpening, routing, engraving. It is particularly handy for drilling holes up to 5/32" for inserting the saw blade when making inside cuts with the jig saw.

As a jig saw, the Moto-Shop cuts wood up to 1 3/4", 18-gauge copper, 1/16" steel, plastics, etc. Equipped with a 3-way blade holder, it can saw in any direction. Table raises and lowers, also tilts 45 degrees for angle and bevel cutting. A clever and virtually foolproof safety guard completely surrounds the blade, making it safe for even a six-year-old.

Weighing only 12 pounds, the Moto-Shop can be set up on a card table or kitchen counter—and then stored away in a closet when not in use. This portability feature solves the space problem for families living in apartments and basementless homes. The company also states that it operates as quietly as a sewing machine and will not interfere with radio or TV reception. Basic price \$33.95. De luxe Model complete with grinding wheel, cloth wheel, wire brush wheel, and flexible shaft with 12-piece accessory set, \$49.95.

Inexpensive Slide Rule



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Featured in this new low-cost do-it-yourself auto accessory, according to the makers, is the overnight charge that puts lasting power in batteries while preventing battery freeze-up.

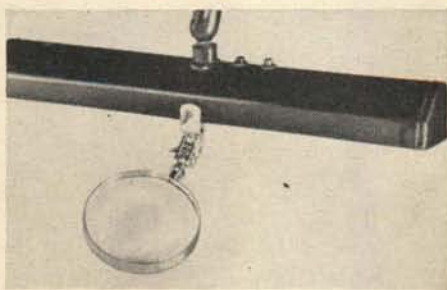
Called the E-Z Battery Charger and Warmer, the device will serve either 6-volt or 12-volt batteries at the flick of the control button—giving E-Z double use, as most chargers now on the market will charge either 6 or 12 volt, but not both.

Hardly bigger than a couple of packs of cigarettes, E-Z boasts a red trouble light that flashes a warning if it is not properly connected.

The charging rate is at a low 3/4 amp., so that current cost is low, and there is little danger of blowing a household fuse. E-Z Battery Charger and Warmer is in a rugged steel-gray metal case, fully guaranteed.

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CHICAGO — Jan. 2nd — Home Owners, Offices, Apartments, including Factories are constantly having trouble with clogged-up pipes which prove expensive in costly Plumbing Bills—

But now—using Water Impact and Air Pressure, here is a new unit called the Plumber's Flushing Gun, which cleans all lines up to 100 ft. It will open any number of bends in pipe. Yet anyone can operate this new gun, which triggers easily.

TOILETS, URINALS, SINKS, and FLOOR DRAINS clogged with paper, grease, rags, sand, and other debris can be cleared with one or more shots from the gun, saving the owner, the Gun's price the first time it is used. This new Flushing Gun may be used on any 1/2 to 6 inch waste pipe including Sink Drains, Bathtubs, Floor Drains, Hot Water Pipes, Drinking Fountains, Septic Tanks and Urinals. Obstructions melt away INSTANTLY when struck by the hammer like blow of this new unit.

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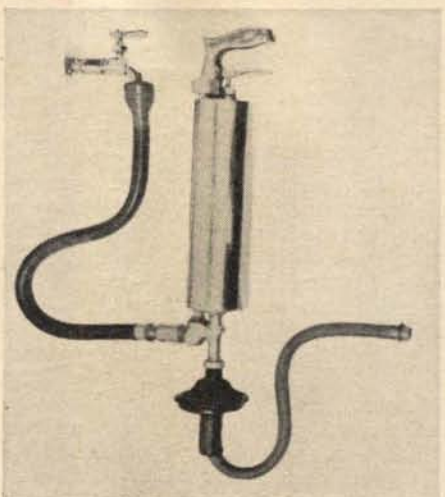
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JUST INTRODUCED and made available is a new patented tool which does away with the old method of sewer rods, which usually take a good deal of time to operate.

Building and homeowners are constantly having trouble with clogged-up drains which proves expensive in costly plumbing bills. But now, using water impact, and air pressure comes a new unit called the Plumbers All Purpose Flushing Gun, which is said to clean all pipelines up to 100 feet. Easy to operate, this gun triggers easily as water from the faucet flows through the gun with the air causing a chain reaction throughout the line. It will remove sand, rags, scale, and obstructions and does a complete job of removing grease which adheres to the sides of the pipelines. There is no need to remove pipeline or grease trap, which saves more time.

Water impact creates kinetic energy (static waves in water). This force is 98 per cent forward and only 2 per cent against the walls of the pipe, eliminating any danger to damaging fixtures. Clogged-up sinks, toilets, including hot water pipes, urinals, bathtubs, floor drains with pipe diameters from 1/2" to 6 inches can be cleared with one or more shots from the gun, often saving the owner the gun's price the first time it is used.

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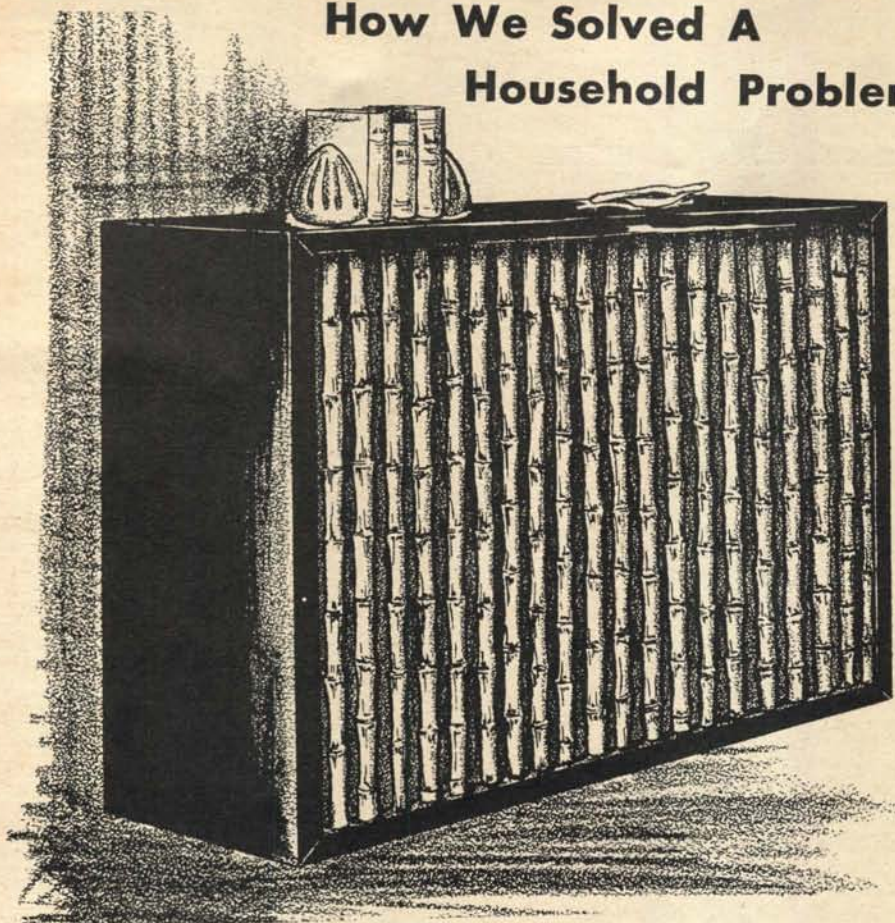
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How We Solved A Household Problem



BOTH MY husband and I were so delighted to find an apartment which answered all our needs that we rented it in spite of the grotesque bronze radiator in the living room. After we moved in, however, I discovered that no matter how I rearranged the furniture, the green stained monstrosity dominated the entire room.

"We've got to hide it," I told my husband.

"But how?" he asked, studying the radiator from every angle. Then his face brightened. "A mock cabinet may be the answer."

He rapidly drew a crude sketch, pointing out several obstacles we had to face and solve. Since we were renters, the cabinet had to be temporary and free-standing. Also, it had to be light in weight, so that I could pull it out from the wall to clean the radiator or to adjust the flow of heat. Somehow the cabinet had to blend with our blonde and black lacquered furniture. But most important, since this was our first do-it-yourself project, the cabinet had to be easy to construct.

We measured the radiator, allowing two extra inches in height and

six in width. When we purchased the lumber, we discovered that twelve feet of 12" x 1" pine was all the lumber we needed to build the top and sides of our cabinet.

To cut costs, the face of the cabinet was made of five bamboo fishing poles cut to fit a square frame of 2" x 1" lumber. Each fishing pole provided four usable lengths of cane which were inserted into the frame so that the thick and thin portions were evenly distributed. One word of caution: bamboo splits if it is nailed without first drilling holes.

For a professional look, we mitered all corners. So that the cabinet would match our furniture, we painted all lumber with semi-gloss black enamel, but left the cane in its natural state, which formed an attractive contrast.

When completed, the cabinet provided an additional counter top for flowers and books. But the greatest advantage was that while we eliminated an eye-sore, we created a conversation piece.

Mrs. Ailene Coleman,
3334 East Gate Drive,
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Do you have a solution for some specific household maintenance or improvement problem that you know is workable because it has actually worked for you? If so, why not share your solution with our readers? It may help them, too. The problem and its solution should not exceed 750 words but need not be that long. Suitable illustrations will increase the chances that we'll use your contribution. If we do use it, payment will be made to you at our usual rates for text and illustrations. Address contributions to Household Problems Editor, **WORKBENCH**, 543 Westport Road, Kansas City 11, Missouri. If you want your contribution returned, in the event we can't use it, be sure to include sufficient postage.

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January **PACK-O-FUN** shows how! Projects galore and not a penny of cost!



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Other scrap items used monthly in **PACK-O-FUN**.

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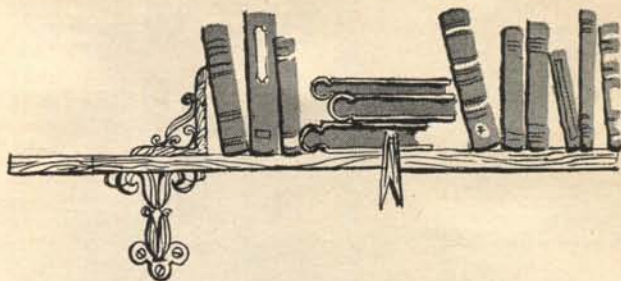
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the craft and home bookshelf

Reviews By Theodore M. O'Leary



Wood Finishing

by Harry R. Jeffrey

112 pages; illustrated; Charles A. Bennett Co., Peoria, Illinois; paperbound, \$2.

IN THE thirty years which have elapsed since the first edition of this book appeared, the craft of the wood finisher has changed greatly. When Harry R. Jeffrey wrote it, lacquers, synthetic paints and varnishes and plastics had not yet appeared. The spray gun was unknown.

Today all these new finishes are on the market in great quantities. Quantities of information for amateurs are also now available. So much information, in fact, that it may be confusing in its very multiplicity. "Everyone," writes Mr. Jeffrey, "needs a ready book of reference to which he can turn for simple, clear advice and instruction." That is what he has set out to provide in this second, revised edition, drawing on his own long experience first as teacher and now as a cabinetmaker and finisher in Wilbraham, Massachusetts. In this book he also takes into consideration the fact that the amateur is not always concerned with saving time and effort. He may want to employ some process for the love of the work and the pleasure it gives, as well as the fine results. For that reason he has included some processes, such as the difficult and time consuming French polishing, that no industrial or professional workman has the time to follow any more.

In the clearest of language Mr. Jeffrey grounds his readers in the fundamental processes involved in wood finishing—preparing the wood, staining, filling, and finally the application of the final finish, whether it be the older oil varnishes, the synthetic resin varnishes, lacquers, penetrating finishes, shellac, French polish, linseed oil or wax.

He has also included chapters on enameling and glazing, refinishing old furniture, and special treatments that can be used on various kinds of the more attractive and useful woods. Another chapter is addressed to those who don't ask "What are the best finishing methods?" but rather, "What are the quickest?" He also deals with such special problems as finishing floors, turned work, salad bowls, darkening scratches in a finish coat, patching a scratched or marred surface, finishing table tops to withstand the action of alcohol or fruit juices, finishing the end grain

of plywood or veneer and smoothing softwood before staining. Scattered through the book are a number of recipes and formulas for finishes which Mr. Jeffrey has found useful and effective in his own shop.

Mr. Jeffrey suggests that there is no longer any excuse for poor finishes. Never before have so many good finishing materials been available. There are also many new processes, all designed for easy use. The principal difficulty, he says, is a lack of knowledge of the necessary processes. Good finishing, he asserts, is not a short process. It demands days, sometimes weeks, and can't be hurried. "You must," he writes, "know not only how to take each step but also what each step accomplishes in the whole process and why it may not be hurried or omitted." That is just what this book tells you.

All About House Wiring

by Floyd Mix and E. C. Pritchard

176 pages; illustrated; the Goodheart-Willcox Co., Chicago; \$2.50.

THE PURPOSE of this book, its authors tell us, is to "take the mystery out of house wiring." Once the utility company serving you brings electricity to your home, the responsibility becomes yours as to how well that electricity will serve you. In this do-it-yourself era many householders are doing some of their own electric wiring. But whether you are doing it yourself or hiring electrical work done this book will be useful in enabling you to insure that your wiring installation is adequate to your needs. And what is an "adequate" system? Here is what it should provide, in the words of the authors of this book:

Enough branch circuits of large enough wire to conduct a full measure of electrical energy to your lights and appliances.

Enough outlets and switches to provide for convenient and efficient use of lights and appliances.

This book has been written for the benefit both of the person who is starting from scratch and installing electric wiring in a brand new house and the person who wants to modify or improve his existing wiring installation. The vast increase in recent years in the number of electrical appliances in use in the average house has made many old systems inadequate. The person building a new house can take this into consideration and the authors urge him

not to install merely minimum requirements since the cost of installing electrical circuits is a small percentage of the total cost of the house. The authors include specific recommendations for determining the number of circuits needed for average residential use. Following these recommendations can save you much inconvenience and help insure that you have the electrical service that you need.

THE AUTHORS describe the various wiring materials and devices used in residential wiring, tell you how to make splices and connections, how to install outlet and switchboxes, conduits and cables. They include a chapter on built-in lighting such as cornice, valance, cove, recess and soffit lighting. They tell you how to install remote control systems which enable you to control all the lighting in your house and the operation of many appliances from a single source. They provide information on signal and communication systems within the house and include here useful information on providing for radio and television sets. Particularly useful is a chapter on modernizing old electrical systems. Another valuable chapter gives a room-by-room listing of necessary electrical outlets and their placement. Finally you are told how much electricity various appliances use, how to figure operating cost, how to read your electrical meter and are alerted to symptoms of inadequate wiring, along with its causes and remedies.

How to Build Modern Furniture

by Mario Dal Fabro

214 pages; illustrated; F. W. Dodge Corporation, New York City; \$4.95.

THIS IS a revised and expanded second addition of a book which has already proved its usefulness to thousands of woodworking craftsmen interested in building modern furniture. Of the fifty-three furniture designs presented in this edition, thirty-six are completely new. In addition, variations have been added to several of the designs carried over from the first edition.

Mario Dal Fabro has spent most of his life working with wood and building furniture. He was reared in Italy where his family designed and built original furniture by hand. For ten years beginning in 1938 Mr. Dal Fabro was recognized in Europe as an important creator of contempo-

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rary furniture designs. He designed hundreds of pieces for private individuals and for a famous Milan furniture house. He came to the United States in 1948 and now designs furniture for American manufacturers. His furniture combines rare functional grace and symmetry with a strength and durability usually associated with heavier pieces.

Mr. Dal Fabro divides his book into two sections. The first is a manual of furniture construction in which all the basic processes involved in building specific pieces are explained. Here you will find instructions on such matters as sawing, surfacing, shaping, gluing, the application of finishes, construction of the basic joints, the use of plywood, covering edges and panels, door, shelf and drawer construction, the use of materials other than wood such as glass, metal and rubber, with emphasis on the joining of these materials to wood, and upholstery.

THE SECOND section consists of the fifty-three specific furniture designs. Each design includes a complete view of the finished piece; front, side and sectional views as they would appear in a professional cabinet-maker's drawings, and an exploded drawing with parts shown in detail for ordering and cutting. Verbal instructions give step-by-step procedure for assembly. Each set of drawings is accompanied by a list of materials. The projects have been planned for the home craftsman using the simplest joinery methods and they can be built with standard grades and sizes of wood, using standard woodworking tools. Incidentally, in the general instructions constituting the first section, the reader is given the alternative of using hand or power tools and the proper tool in each of these two categories is named. Variations of detail are possible on most of the projects and advanced workers may substitute more difficult joints and details, and adapt plans to their own dimensions. Mr. Dal Fabro recommends, however, that beginners in woodworking should not make changes in basic construction.

Among the designs are pieces of furniture for almost every use in a house. Included are various modern tables, cabinets, chests, dining sets, chairs, desks, bookcases and beds. There are television and radio cabinets and tables, a record storage cabinet, a flower box, two workbenches, two dressers and an open-shelf breakfront.

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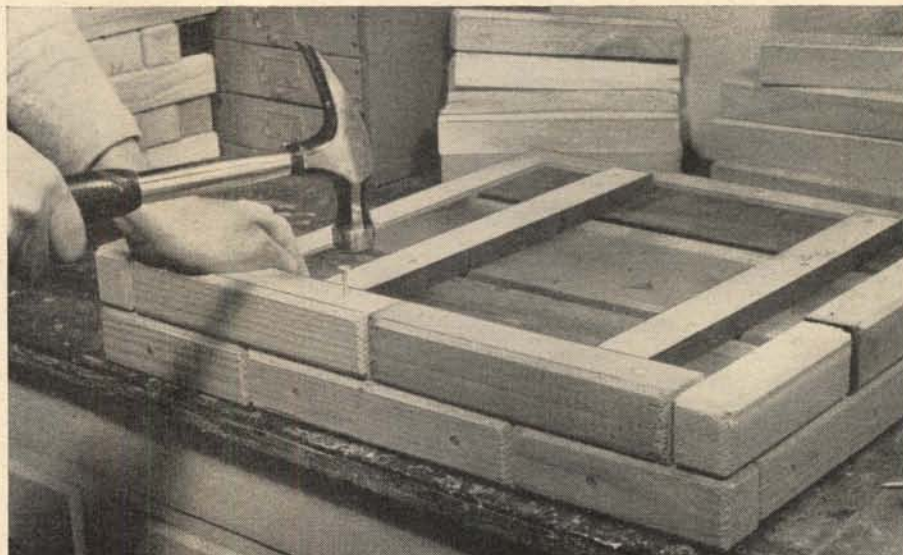
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Planters Built of Wooden "Brick"

R. J. DE CRISTOFORO

Looking for a use for those left-over odd lengths of lumber? They might be just the thing for planters like the handsome ones shown here.



NOTE THAT PLANTER BASES are made of 2" x 6" T&G boards assembled with cleats. First "course" of brick is side nailed into base with coated nails. Following courses are top nailed into each other.

CUTTING LUMBER into blocks that resemble brick provides, not only a unique and attractive method of fabricating projects like the outdoors planters illustrated, but also a means of salvaging odd lengths. The "bricks" for the items shown were cut from castoff lengths of 2" x 6" T&G (tongued and grooved) roofing boards salvaged from a heap ready for burning near a new home tract.

The wood is redwood, which is ideal for the purpose, but fir or pine could be used if suitably protected from de-

terioration due to contact with soil and water. This could be accomplished with a liner of roofing felt or similar material, or the wood could be treated with a preservative.

Best bet is to cut the material into 2" x 2" squares and to chamfer the face, top and bottom edges before cutting to length. The strips can then be crosscut into the brick lengths required, and the ends chamfered.

For a rustic look, use a combination blade with set teeth for both ripping and crosscutting and chamfering. If a more formal appearance is

desired, cut the strips oversize and bring to finish dimensions by jointing. Long chamfers can be accomplished on the jointer; short ones on a disc sander.

No nailing problems will be encountered if redwood or pine is used. If the wood is fir, it would be wise to predrill lead holes for the nails to avoid splitting.

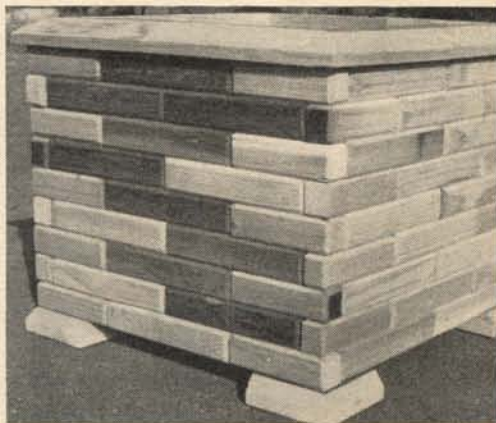
Redwood can be finished attractively with a coat or two of boiled linseed oil. On pine or fir, a stain followed by applications of marine varnish might be more appropriate.



WOOD "BRICK" planter is unique and attractive and provides a means of salvaging castoff lengths of lumber. For smooth, formal effect, joint all sides. Chamfer provides a shadow line and imitates mortar beds. This is the planter shown in Figure 1.



A MORE RUSTIC EFFECT is achieved by chamfering with a blade having set teeth. For tight fit, coat brick with waterproof glue before nailing. Otherwise, line inside with roofing paper. This is the planter shown in Figure 2.



INTERESTING VARIATIONS are possible by using brick of contrasting tones. An occasional knot in the wood, if sound, adds to the rustic appearance.

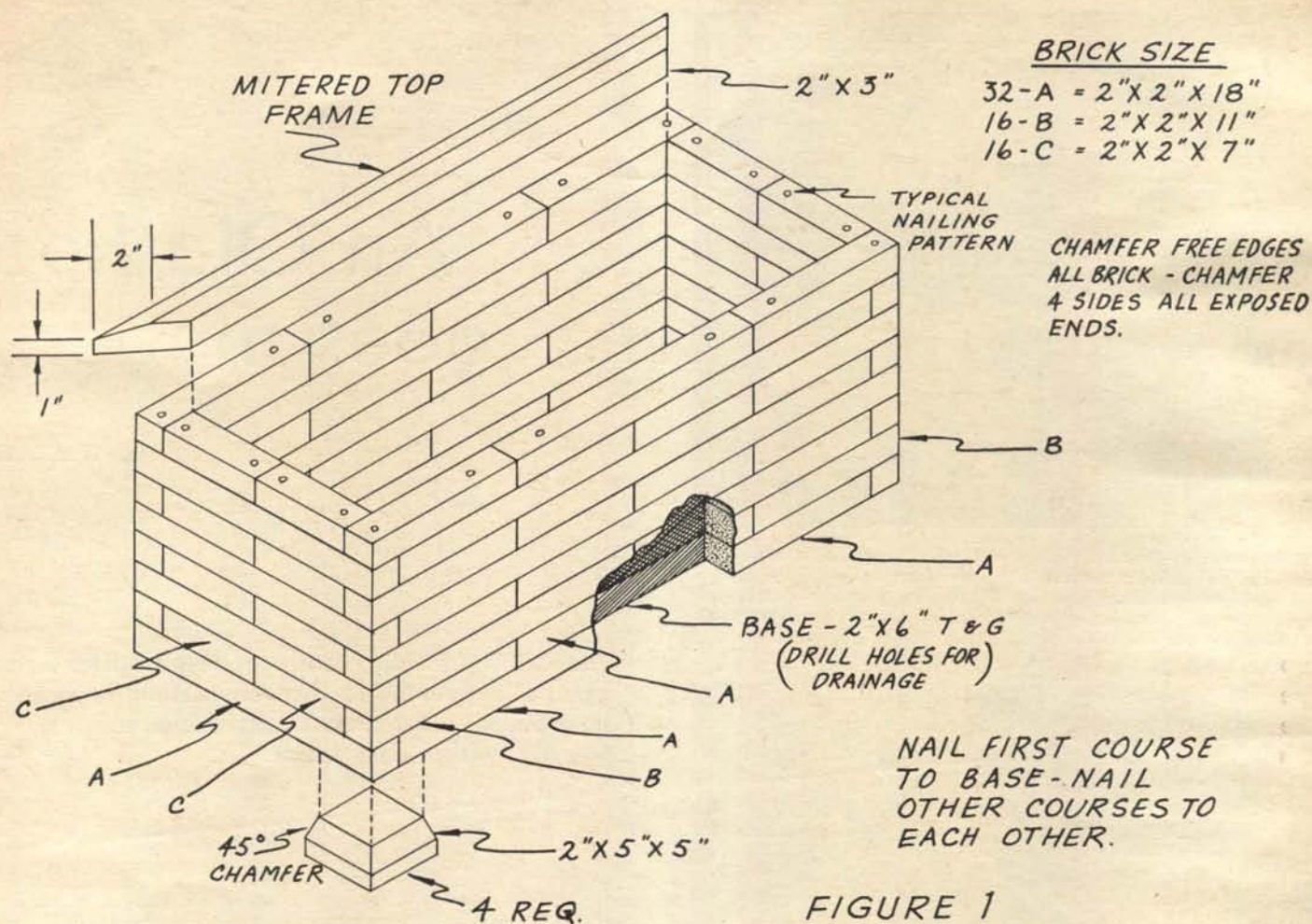


FIGURE 1

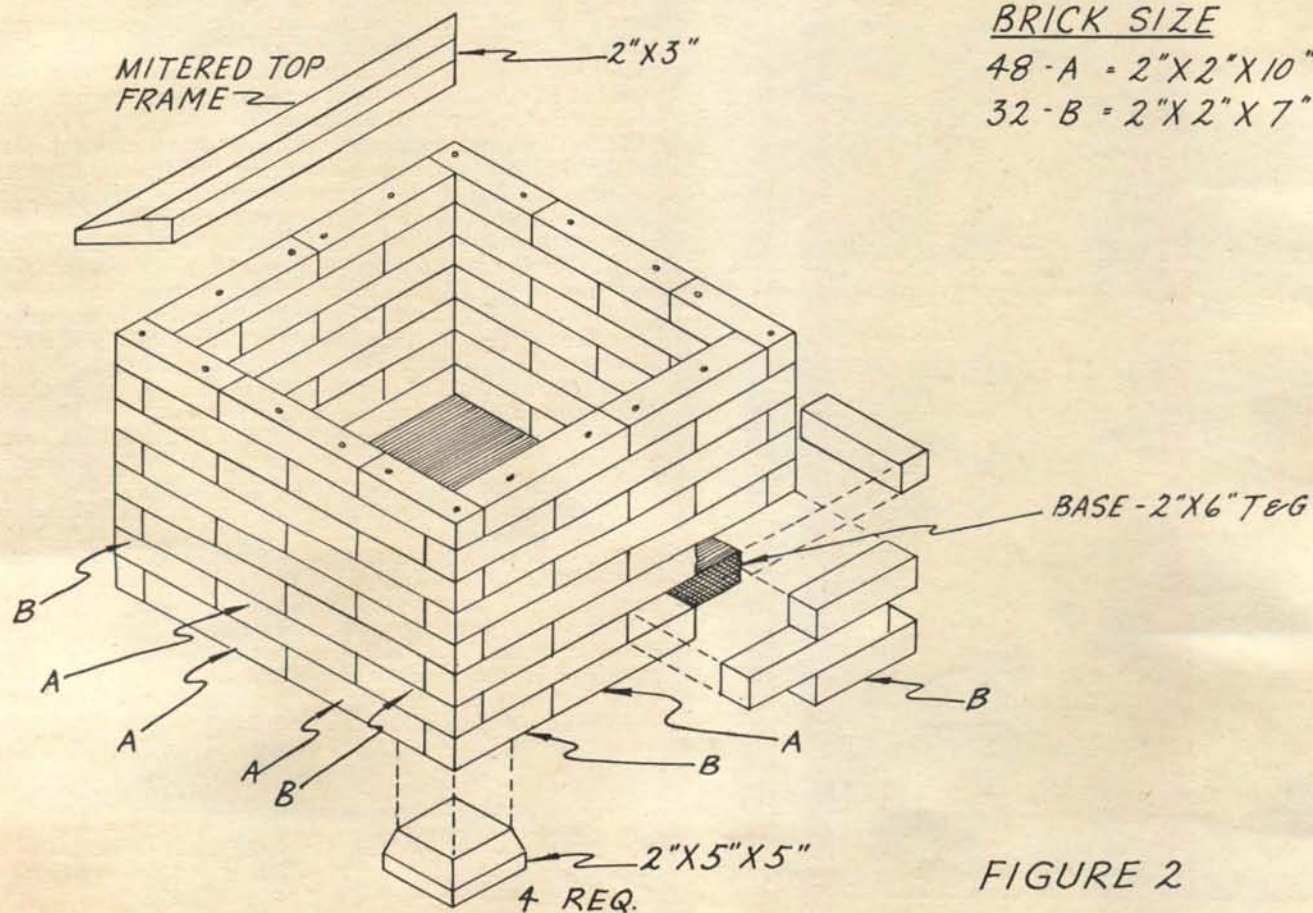
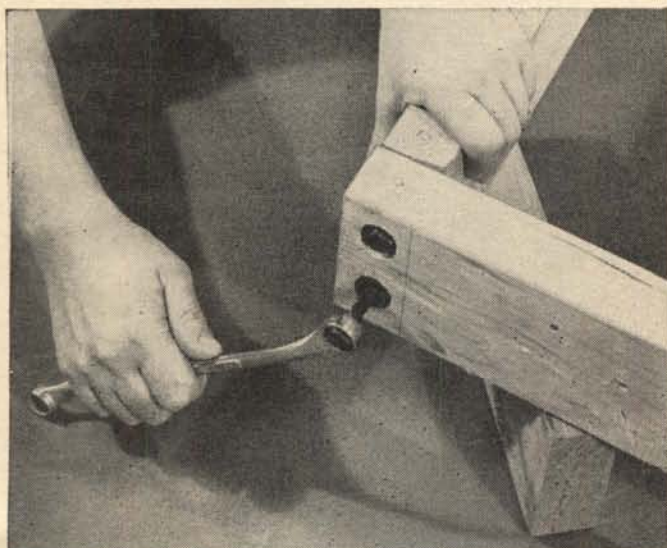


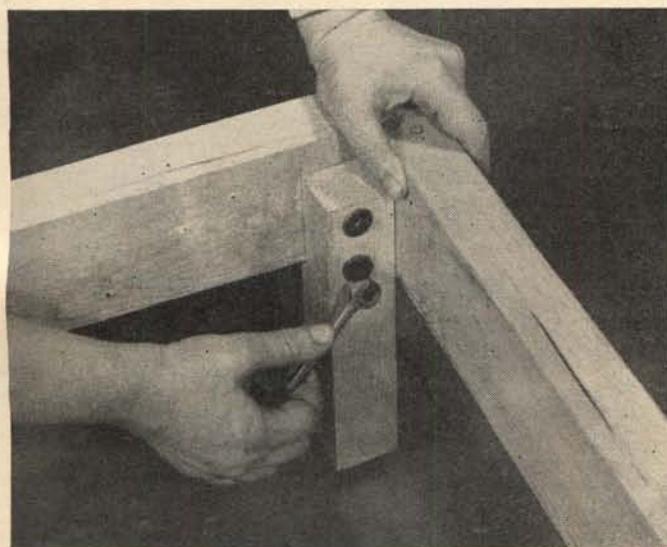
FIGURE 2



PHOTOGRAPH 1—This old double bed had a comfortable spring but the frame was definitely outmoded. The old frame was discarded and the bed given a 'face lifting' treatment by building a new low Hollywood type frame and attaching a headboard with recesses for books, radio or whatever suits the fancy.



PHOTOGRAPH 2—Assemble the frame of 2" x 4" stock with lag screws. Two screws are used at each corner.



An Old Bed goes modern

ELMA WALTNER

The distinguishing feature of this bedstead you can build yourself is the compartmentalized headboard which puts books, radio and the like within easy reach.

IF YOU'VE been wondering what to do about that outmoded bedstead (Photograph 1) whose spring and mattress are comfortable "as an old shoe," here is an answer to your problem. Discard the old bedstead and build a new frame to fit the spring and mattress, complete with a headboard to hold books, radio or whatever you like. Or, of course, you can build the frame to fit brand new springs and mattress.

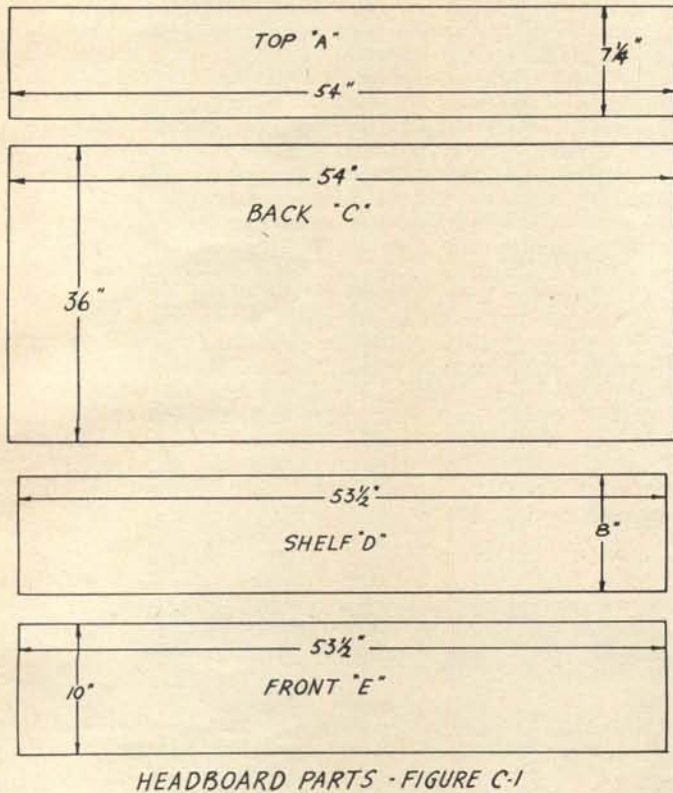
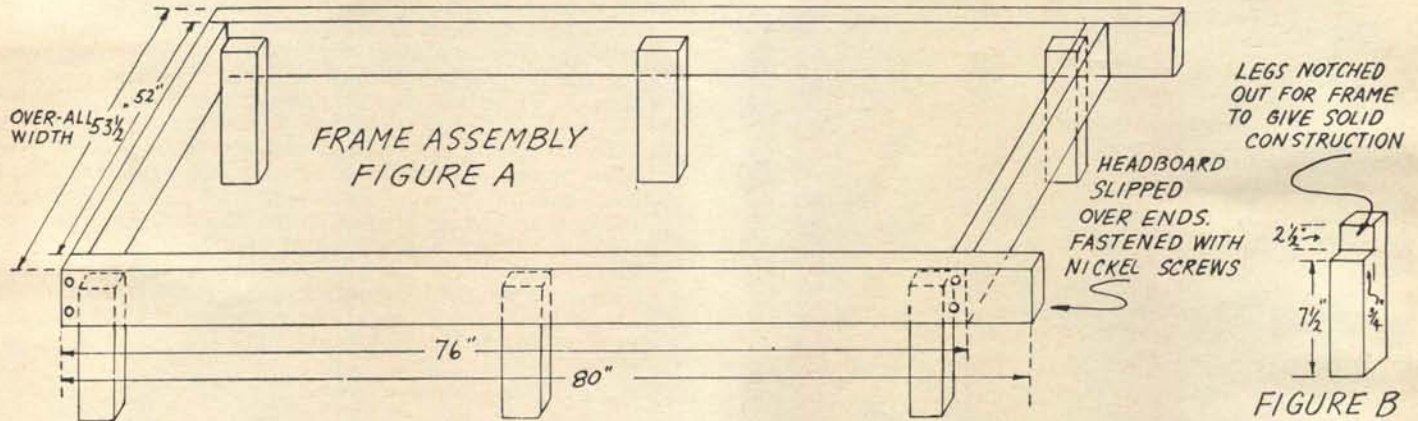
Build the bed frame of 2" x 4" fir stock. Cut the pieces to the lengths given in the frame assembly diagram (Figure A). Assemble the frame with lag screws (Photograph 2). Note that at one end the long pieces of the frame protrude beyond the crosspiece. The headboard will be fastened to these protruding pieces later. Cut the legs of 2" x 2" hardwood (oak, maple, walnut) to the dimensions given in Figure B of the frame assembly diagram (Figure B). Sand the legs thoroughly and finish with varnish and allow to dry. Attach the legs to the frame, using two lag screws to hold each leg in place (Photograph 3). These screws should not pass entirely through the framework to the outside. Six legs are used. Each one has either a furniture glide or ball caster fastened to the bottom, whichever you prefer.

Set the spring in place on the framework. Since the lengths of springs vary, it is well to check the length before assembling the frame. Some length adjustment in the long pieces may need to be made to accommodate a particular spring.

Quarter inch fir plywood and $\frac{3}{4}$ " x $\frac{3}{4}$ " strips of pine stock are used for the headboard. Cut the pieces as specified in the headboard parts diagram (Figure C-1). Pine strips run from top to bottom where back and ends join (Figure C-2). Fasten back and ends to the

PHOTOGRAPH 3—Legs of 2" x 2" hardwood stock are notched, then fastened to the frame with lag screws. Six legs are used and furniture glides or ball casters fastened to the bottom of each.

10"X2"X2" LEGS FASTENED TO INSIDE
OF FRAME WITH LAG SCREWS - SET LEGS
1" DOWN FROM TOP OF FRAME.



HEADBOARD PARTS - FIGURE C-1

MATERIALS LIST

For Frame

- 2" x 4" Fir Stock
 - 2 pieces 80" long—for sides
 - 2 pieces 52" long—for ends
- 2" x 2" Hardwood Stock
 - 6 pieces 8 1/2" long—for legs
- Lag Screws
 - 8—1/4" x 5"—for assembling frame
 - 12—1/4" x 3"—for attaching legs to frame

For Headboard

- 1/4" Plywood
 - 1 piece 54" x 7 1/4"—for top
 - 1 piece 54" x 36"—for back
 - 1 piece 53 1/2" x 8"—for shelf
 - 1 piece 53 1/2" x 10"—for front
 - 2 pieces 36" x 8"—for sides
 - 2 pieces 10" x 7 3/4"—light compartment sides
 - 1 piece 18" x 10 1/4"—light compartment front panel
- 3/4" x 3/4" Pine Stock
 - 2 pieces 36" long—back and side supports
 - 3 pieces 52 1/2" long—cross back top support
 - back shelf support
 - front shelf support
 - 2 pieces 7 1/2" long—side shelf supports
 - 2 pieces 9 1/4" long—front supports
 - 2 pieces 9 1/2" long—support sticks at back of light compartment side panels
 - 2 pieces 10" long—support sticks at front of light compartment side panels
 - 2 pieces 14" long—support sticks at top and bottom of light compartment front panel

Hardware

- Flathead wood screws 3/4" x 8—for assembling plywood pieces to support strips.
- 4 nickel screws 1/4" x 8—for attaching headboard to frame.

Brads, 1" x 17

- Wood-grain Self-Adhesive Plastic
 - 4 yards (18" wide)

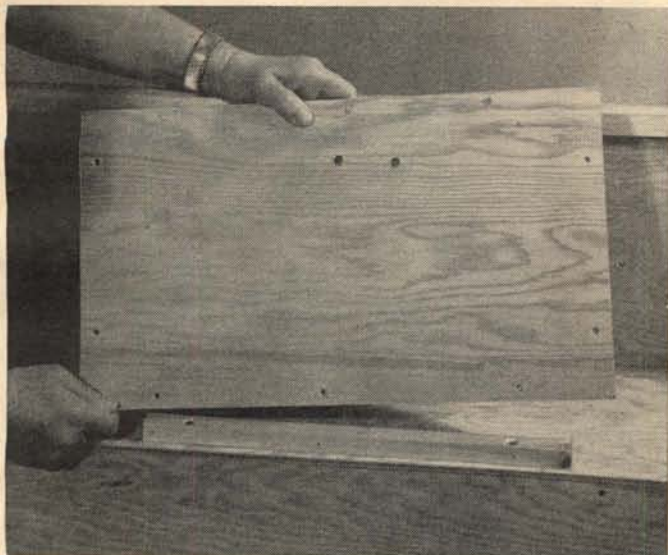
Electrical Equipment

- Light fixture
- Double outlet surface socket
- 10' lamp cord
- 1 plug cap

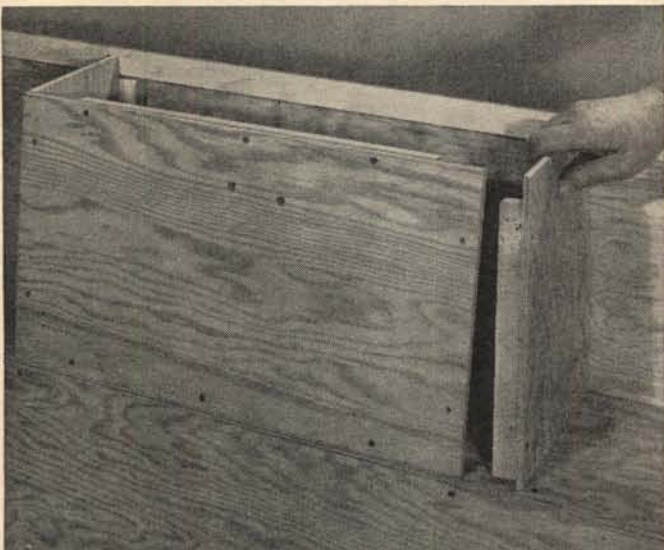
TOOLS

- Hammer
- Saw
- Screw driver
- Socket wrench

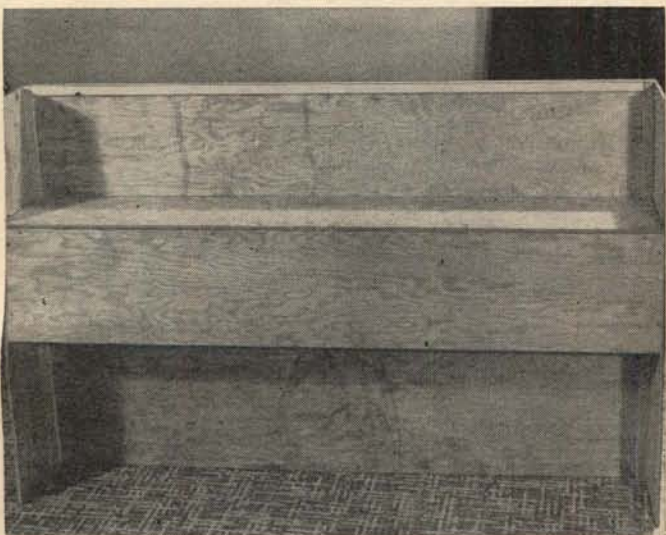
strip with 3/4" wood screws. Cross strips of pine run across the top of the back to support the top piece, at back to support the shelf, and along the underside of the shelf to support it and give a fastening surface for the front panel (see construction view of headboard, Figure D). Attach the shelf and lower front panel to the support strips, using 3/4" flathead wood screws. Pine strips are also used as fastening surfaces for attaching the light compartment front panel and side panels. After screwing these strips in place (see construction view of headboard, Figure D), attach the light compartment front panel to the support strips (Photograph 4). Fit in the light compartment side pieces and screw into place (Photograph 5). Photograph 6 shows the completely as-



PHOTOGRAPH 4—Fit the front panel of the light compartment to the bottom supporting strip and screw into place.



PHOTOGRAPH 5—Fit the end pieces of the light compartment into place and fasten with screws at front and back.



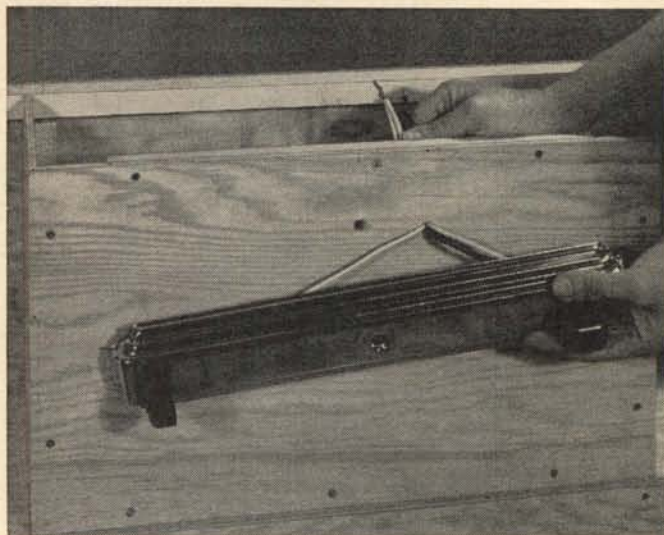
PHOTOGRAPH 6—The headboard framework is assembled of quarter inch plywood and $\frac{3}{4}$ " x $\frac{3}{4}$ " supporting strips. Screws are used for assembly.

sembled headboard, except for the top piece which is not put in place at this time. The construction view of the headboard (Figure D) shows the location of all parts indicated in the size drawings of the headboard parts diagram (Figure C).

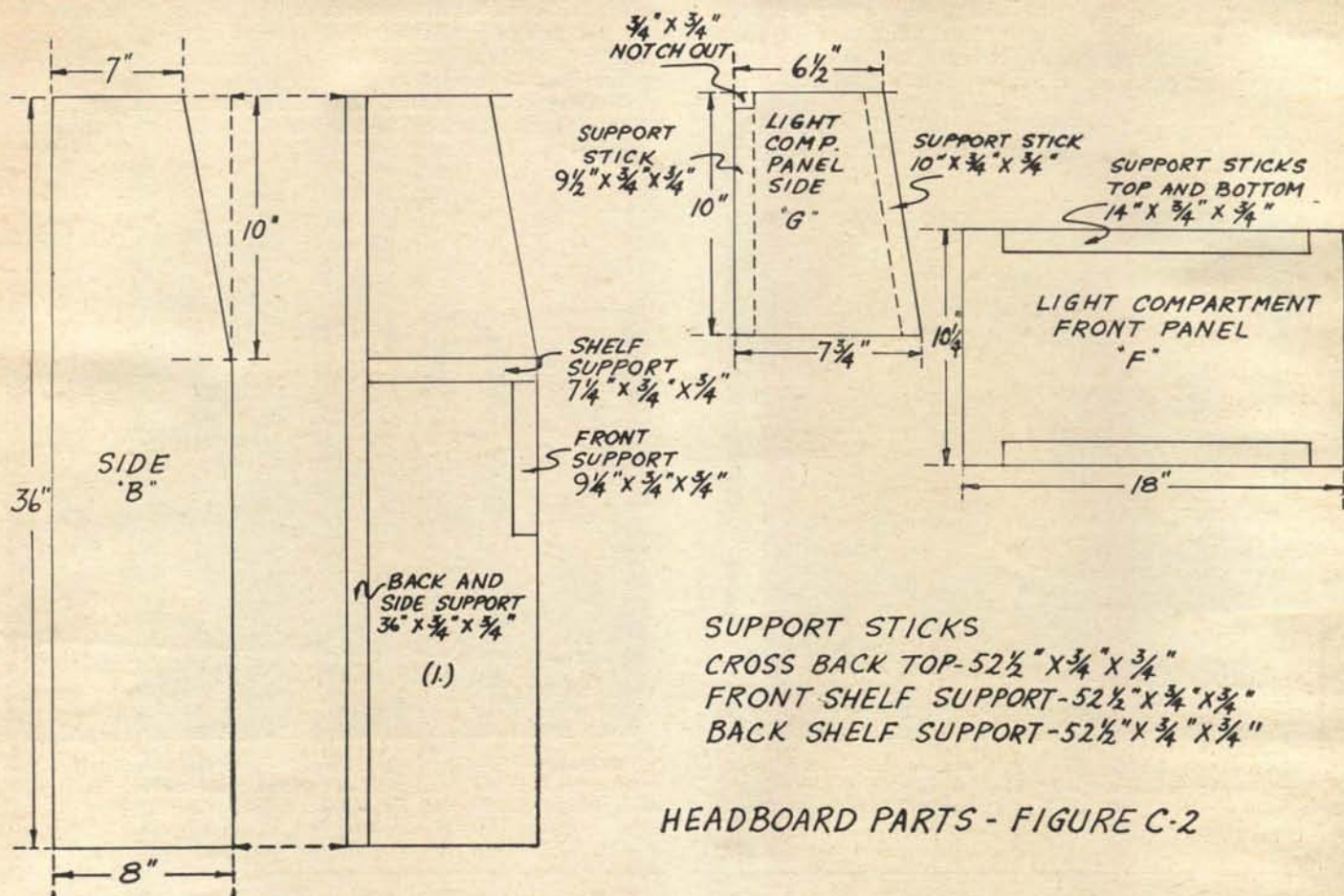
The reading light is a Lumiline incandescent fixture but a fluorescent fixture may be used if preferred. Attach the fixture to the front panel of the light compartment, ("F" in Figure C), passing the cords through a hole in the panel (Photograph 7). A single screw at the center of the fixture holds it in place to the panel. After lining up the fixture in its proper location, remove it again and put it aside for the present.

Mount a surface plug-in outlet against the back just beside the right side panel of the light compartment (Photograph 8). The light wires pass through a hole in the side panel to connect to the light fixture and the plug-in wires run through a hole in the back of the headboard to reach the wall outlet. Do not make any wire connections at this time but simply line up the plug-in outlet, then remove it and lay it aside.

YOU ARE now ready for the finishing. Sink all the screw heads a bit below the surface of the wood. Fill the depressions over the screwheads with crack filler and allow it to dry thoroughly. Now sand the entire piece smooth and dust off the surface to free it from any particles left from the sandpapering. Apply a coat of shellac to all surfaces and edges. After the shellac has dried, apply the final finish, contact plastic in whatever wood grain finish you prefer. A birch grain was used on this piece. This self-adhesive plastic covering is sold under several brand names, of which perhaps the best known is Con-Tact. The material is available in a number of wood grain finishes, as well as other designs. It is 18" wide and costs about 50 cents a yard. Approximately 4 yards will be needed to cover this project. Complete instructions for applying are given on the paper back of the plastic. The pieces are first cut to size, then the paper backing is stripped off and the adhesive coated pieces fitted to the wood, then smoothed into place. If the fit is not quite perfect the first time, the plastic material may be peeled off and refitted, a feature which makes a good job of application a fairly simple matter. Apply the material to the front of the light compartment first, then to the sides of the light compartment. Next, apply it to the inside of the back and inside of the side pieces, then to the shelf and finally to the lower front panel. Photograph 9 shows the plastic being fitted in place.



PHOTOGRAPH 7—Fit the light in place on the front panel. After fit is assured, remove the light fixture and put aside.

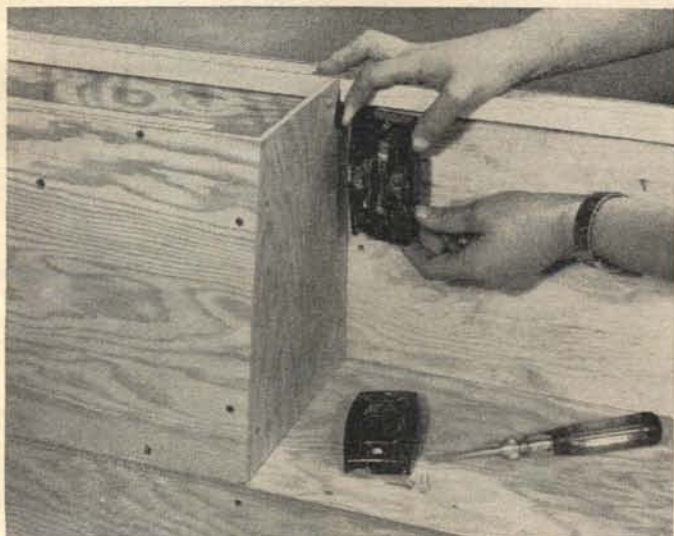


Attach the reading light and plug-in socket and make the wiring connections.

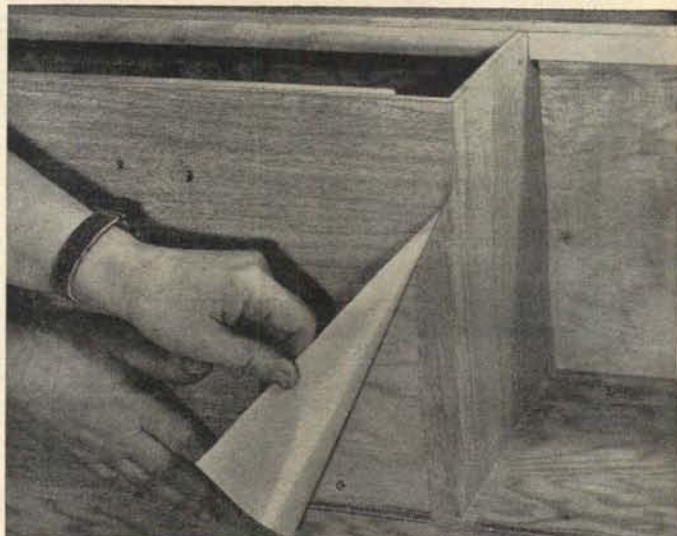
Cut a strip of the plastic about 1 1/2" wide and 54" long to cover the front edge of the top piece, pressing the excess to the top and bottom of the piece. (To save covering material a number of short scrap pieces may be used for this purpose instead of one long strip. Lap

the pieces over each other. The joints will be hardly noticeable.)

Fit the top piece in place and fasten to the side pieces and back supporting strip with brads (Photograph 10). Cover the top and last of all the outside of the side pieces with the plastic. Cut all pieces a bit larger than needed so that edges may be overlapped to give



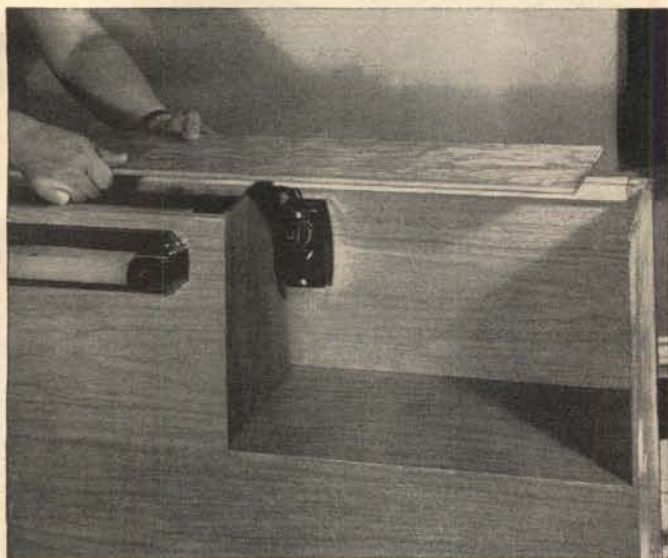
PHOTOGRAPH 8—Fit the plug-in outlet in place on the back piece. After assuring fit, remove this also.



PHOTOGRAPH 9—Apply contact plastic covering to the light compartment, back inside and shelf, then to the lower front panel. A birch finish grain was chosen in this case, but the plastic comes in a variety of wood finishes as well as other patterns.

a neat joint. Unless the bed will be away from the wall it is not necessary to cover the back side of the headboard. In case you want to cover it, however, figure on three yards extra of the plastic material for this purpose.

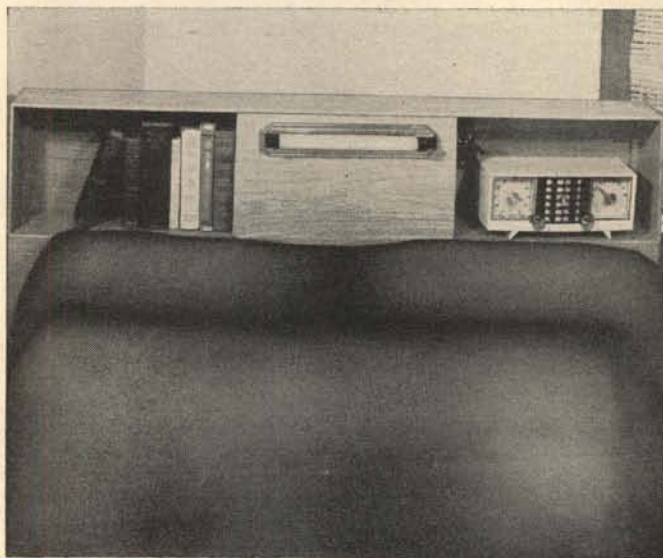
Tap furniture glides to bottoms of the supporting strips which run along the back from top to bottom.



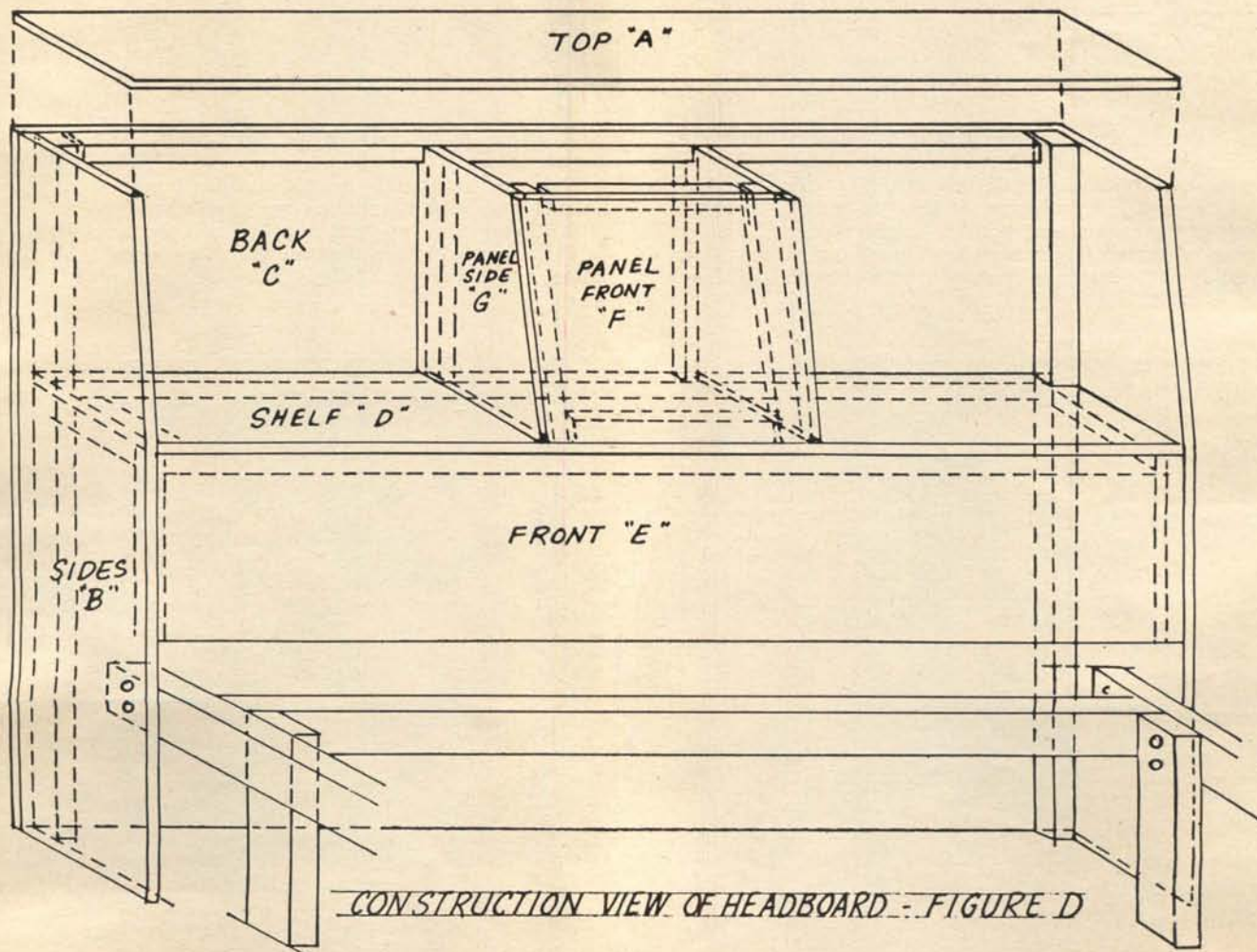
PHOTOGRAPH 10—Attach the light fixture and the plug-in outlet and make the wiring connections. Cover the front edge of the top piece with the finishing material. Fit the top in place and fasten with brads. Then cover the top and last of all, the sides.

Slip the headboard in place with the protruding ends of the frame inside the side pieces of the headboard. Fasten the headboard sides to these frame ends with round head nickel screws.

Photograph 11 shows the completed headboard after it has been attached to the frame, with compartments in use for books and clock-radio.

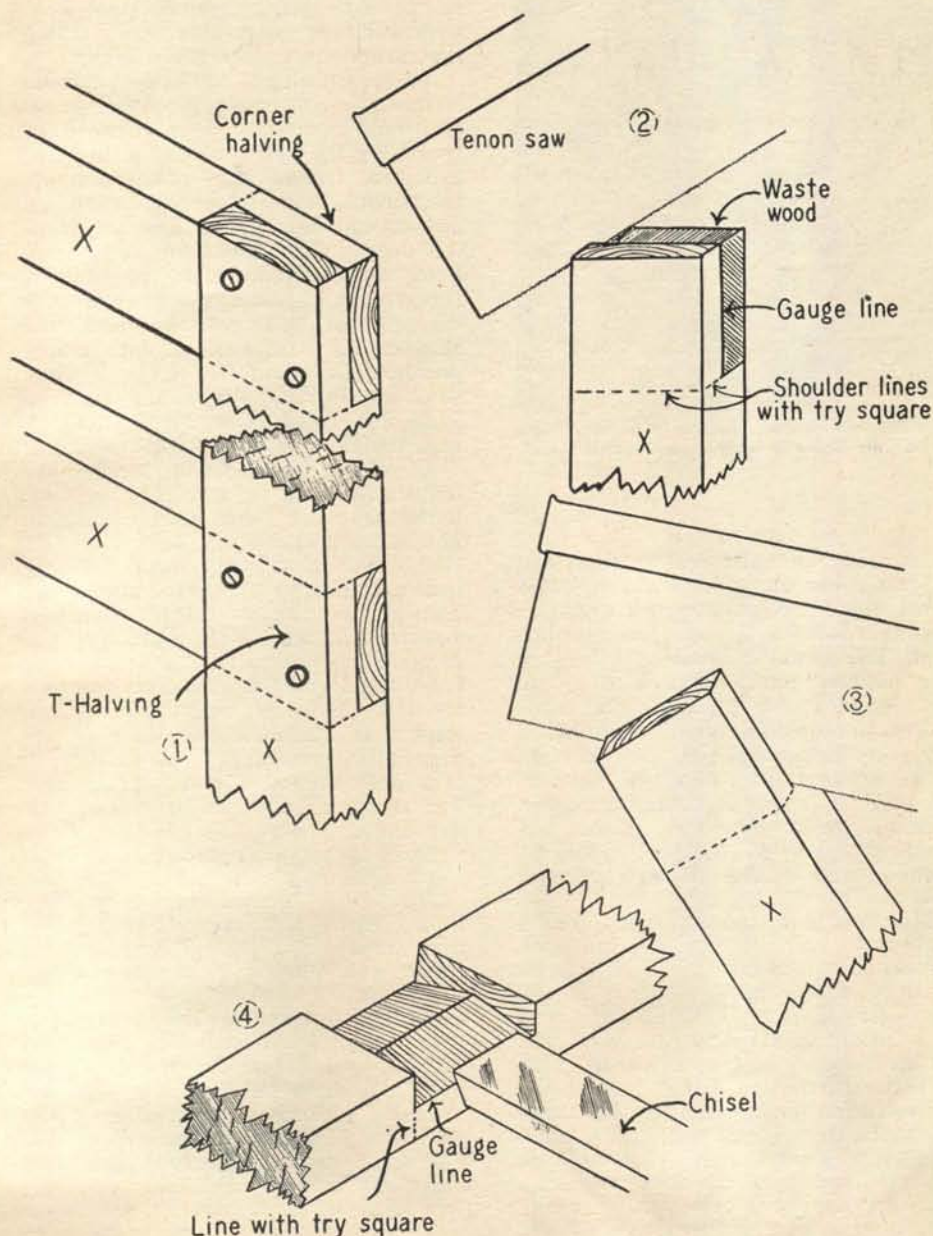


PHOTOGRAPH 11—Slip the headboard in place and attach to the protruding ends of the frame with round head nickel screws. The Lumiline incandescent fixture gives an excellent no-glare reading light.



How to make Two Useful Wood Joints

DALE MOREY



ALTHOUGH MANY woodwork constructions can be made without joints, there are times when joints are necessary. One of the simplest is the halving joint.

Two types are shown in Figure 1: a corner halving, and a T-halving. Both are useful when making simple frames, and once you can form them accurately you can tackle more complicated joints with complete confidence.

Before marking out any joints decide which is to be the front or face of each piece of wood and mark it accordingly—a cross is used in the accompanying illustrations. Measure the width of the wood from each end, and draw lines right around the wood with a try square. Do this on both pieces to be made into a corner halving, and then make scratch lines around the end of each piece of wood with a marking gauge. Always gauge from the marked face.

The halvings are made entirely with a fine-tooth tenon saw. Start sawing at the corner away from you (Figure 2), saw across the end, and then tilt the wood and down one edge (Figure 3). Turn the wood around in the vise, tilting it again, and saw down the other edge. Finally, with the wood upright and the saw horizontal, complete the down cut. Saw across the shoulder line to remove the waste wood.

Accurate and careful sawing is necessary, and the saw cut must always be just inside the waste portion, so that half the width of the gauge line is left. This is simplified if you shade the wood that is to be cut away.

IN T-HALVING, one half of the joint is made exactly as already explained. The other part—the notch—is marked out by drawing lines around the four sides of the wood with a pencil and try square, and then gauging the depth.

Saw down the two shoulder lines just as far as the gauge mark and remove the waste with a chisel. Cut first from one side then from the other, to form a V-shaped ridge. There is no danger of splitting the wood or going too far if you keep the bevelled side of the chisel downwards, as shown in Figure 4.

When you have to cut exactly to the gauge line on both sides, remove the ridge by paring with the chisel turned so that the flat side is down.

The joints should fit tightly without any further attention, but at the first few attempts you may have to remove a little extra wood with a chisel. If so, be sure that it is really sharp. It is better to leave the wood slightly rough from the saw so that there is a good key for the glue.

Halving joints are best secured, after gluing, with a couple of screws placed on a diagonal, as shown in Figure 1. Always make clearance holes for the screws in the upper half of the joint.

Maintaining that New Look on Floors

HAROLD K. PENNINGER

Having told you in previous articles how to sand and finish floors, an expert now explains how to keep them looking their best.



ONE METHOD of cleaning accumulated layers of dirty wax off floors is by the use of steel wool and varsol. It's a hands and knees job.

ALMOST INVOLUNTARILY a housewife will exclaim, when looking at a newly finished floor, "How can I keep it that way?" The maintenance of such a floor requires faithful daily attention, including periodic waxing.

Hardwood floors should be cleaned and waxed two or three times a year. There is also the possibility of over-waxing to the extent that wax accumulates and dirt is embedded in each layer. Eventually a room will have multiple layers of dirty wax around the edges. The middle of the room and through doorways in contrast will have the finish worn off and dirt ground into the pores of the wood.

In order properly to protect a new floor you must endeavor to wax the floor in proportion to its wear.

Rugs and carpets, of course, are the best protection for a floor. However, a homeowner does not always desire to cover up a newly finished floor. Whenever possible, throw rugs, with rubber bases to prevent slipping, should be placed on the floor before an outside door. Other throw rugs placed at the kitchen entrance

to a room, in halls and at the head of basement steps also aid in floor protection. Any constricted area, as through doorways, etc., needs protection. The usual custom of a rug in the central part of a room is, of course, ideal for protecting a floor. IF YOU are quite determined to leave all your floors open to traffic then more diligent attention will have to be paid to waxing. I stated before that all floors should be waxed according to use. Wood floors should be **cleaned and waxed all over at least twice a year.**

Many diligent homemakers laboriously move all the furniture and wax underneath as often as once a week or once a month. This is not necessary. Layer after layer of dirty wax is built up under the furniture and on the borders of rooms where there is little traffic.

Depending on the abuse, the areas of floors through doorways, in halls and central parts of rooms should be waxed from one to four times a month. Be sure, however, to apply wax only where foot traffic is heavy.

Avoid applying wax up to the shoe molding. One never walks that close to a wall. However, wax may be applied up to the front of chairs, sofas, etc. The idea is, of course, constantly to replace worn-off wax in traffic areas. It goes without saying that a floor must be protected from sand and grit by the usual cleaning methods.

Black heel scuff marks trouble many housewives. These are easily removed by using fine 000 steel wool with a dab of paste wax. Always rub the same way as the flooring runs.

As mentioned before, periodic cleanings are necessary. The quickest, but most laborious method of removing the dirty wax is to use No. 2 or No. 3 steel wool rubbing it off the floor. This is accomplished by getting on your knees and throwing the body weight upon the steel wool held in the hands and pushing it forward and back again always with the grain of the wood. The steel wool scrapes the dry wax off into a dry powder. Occasionally pat the steel wool on the floor to shake out the loose dirty wax. Now, after vacuuming, the floor is ready for rewaxing.

An easier, but dirtier and more lengthy method is to wash the floor with varsol or paint thinner. Again get on your knees and with No. 2 or No. 3 steel wool, dip intermittently into a container of varsol and scour a small area, approximately two feet square, rubbing with the grain of the floor. Then use soft rags to wipe up the dirty dissolved wax. You had better have a large quantity of clean wiping rags. Allow the floor to air dry before you apply the new wax. If a gray smear appears after drying, this can be wiped off with clean dry rags.

The best way to choose a wax is to see how firm it is when you dig it out of the can. (Paste wax is preferable.) Mushy wax scuffs more easily and wears off. But if you find a paste wax that is firm and resists the pressure of the finger tips, that is the best wax. A firm wax may crumble into chunks, but it will make an equally harder coating of wax over a floor. Wax should be applied in thin, uniform, even coats from wall to wall after a general cleaning, but only in traffic areas between cleanings as described before. Electric polishers are a necessity to keep wood floors looking their best.

AFTER YEARS have gone by, floors will eventually begin to "show their age." A badly splintered board or a scorched board near a fireplace may need replacing. Uric acid stains left by pets or diapers are hard to remove by sanding. Sometimes these deeply stained boards are also removed.

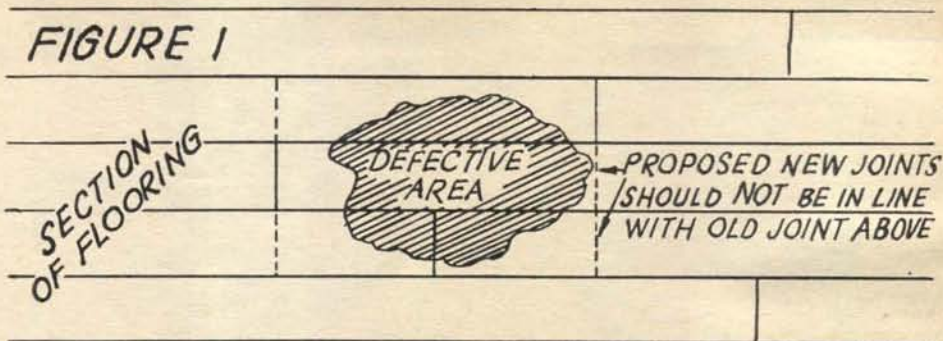
A sharp wood chisel and a hammer may be used to cut out defective sections of flooring. Be careful to cut squarely across the boards so that when a new piece is replaced it will appear as a normal joint. If more than one board is removed in this same area, do not cut them all together in a straight line (Figure 1) but stagger the joints to make it look more natural (Figures 2 and 3). The tongue will have to be cut off the boards in the patch area and also on the new ones going in, in order to slip them in place. It is sometimes necessary to use a plane to shape the boards to a better fit. Be sure that the same kind of wood is used as is removed and, if possible, use old flooring to patch an old floor. The coloring is more nearly alike. These replaced boards must be face nailed and the nails (either cut nails or finishing nails) set deeply into the wood to allow for sanding or scraping. Refinishing will be described later.

SOMETIMES A floor which has not been protected as it should be has very worn and grimy areas as at the front door, in the dining room doorway, by the kitchen, or in the halls. The main body of these rooms may look very neat and clean, but these worn areas disgrace the rest of the house.

These places may be "spot sanded," and refinished. It is best to use an edger with No. 3½ sandpaper to remove worn finish and dirty wood, passing back and forth from side to side going the same direction as the boards run. The border of the oval-shaped sanded area should be sanded lightly at the end of each sanding stroke with the edger. The idea is to "feather out" the sanding to a gradual blend with the good finish around the area. No. ½ paper may then be used to give a fine sanded finish; be careful to extend the sanding strokes about a half inch beyond the coarse paper scratches. Hand scraping and hand sanding with No. 0 sandpaper will then be necessary to remove machine marks which may absorb stain later.

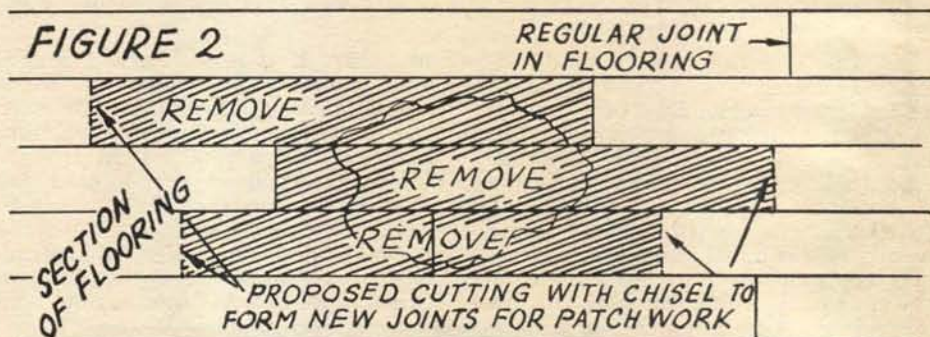
Where an edger is not available, a sharp wood scraper may be used. Scrape the same direction as the boards run. Lighten up on the pressure at the borders of the scraped area. The purpose, of course, is to feather out the edges as described in the other method when using an edger. Now hand sand the whole area with No. 0 sandpaper, rubbing lightly at the borders of the scraped area adjacent to the good finish.

FIGURE 1



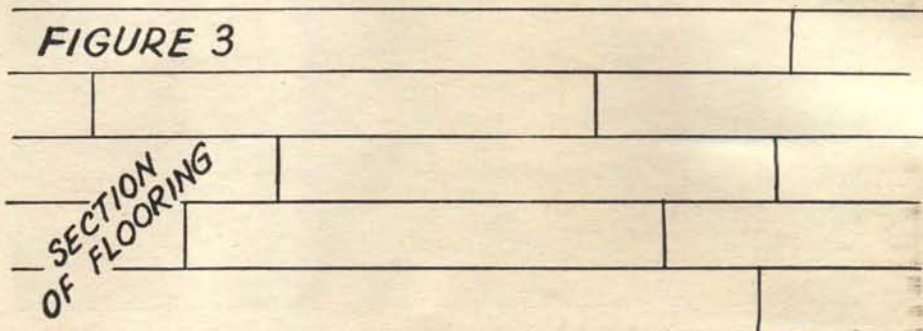
NOTE dotted lines at intersection with other regular joints of flooring illustrate how not to patch flooring. Two or more joints in a line weaken the floor in this area and are also unattractive in a floor pattern.

FIGURE 2



NOTE dotted lines here indicate where boards should be cut with a wood chisel and hammer to properly patch defective flooring.

FIGURE 3



NOTE after new patch flooring is installed the pattern is similar to any other section of the floor and just as strong. When finished, no one could tell very readily where floor was patched before.



UNUSUALLY WORN or grimy areas on a floor (usually places where there has been constant concentrated use) should be spot sanded and refinished. An edger is good for this but if one is not available you can achieve satisfactory results with a sharp wood scraper. Always scrape the same directions as the boards run.

All finish darkens with age. Natural oak finish, which has aged, may be matched in color by using, **experimentally**, combinations of colors in oil, such as raw and burnt sienna. About a cup of penetrating sealer (or turpentine) may be used. Add approximately a scant teaspoon of raw sienna to a cup. Mix and with a clean rag apply a little to the border of the sanded spot, rubbing it out

smoothly. If it is too light a shade, then add slight amount of burnt sienna, mixing a little of each color and testing until the approximate shade desired is obtained. After stain is mixed, apply it evenly over the whole spot. Then use a clean rag to wipe the excess stain off with the grain of the wood and let it dry before adding additional coats of finish. Other types of wood, such as old pine



AFTER A BAD AREA has been scraped and sanded, new finish can be applied with a cloth. It's possible to match the finish on the rest of the floor, which probably has darkened with age, by experimenting with combinations of colors in oil such as raw and burnt sienna.

or stained floors, may require experimental mixtures of additional colors such as raw and burnt umber.

After the basic color has been applied, subsequent coats should all be natural finish. One should endeavor to finish resanded spots with the same type of finish as was used before. For example, a soft, penetrating sealer type of finished floor should not be spot finished with varnish as it would be too glossy. Likewise, penetrating sealer on a spot in a varnished floor would appear too dull. Use a finish to match. Sealer, shellac, or varnish should be applied lightly. Apply the finish both ways from the middle of a spot so the brush is partly dry when approaching the margin. Feather out the finish by lifting the brush lightly off the floor as you come to the margin of old finish. Needless to say, each coat of finish should be properly hand sanded and swept between coats and waxed after the last coat.

Flooring which has been repaired as described earlier is spot finished in the manner just described.

ANOTHER EFFECTIVE method of refinishing worn areas without sanding (as well as oak steps which are worn) is to clean and bleach with oxalic acid. This method is especially good on a floor which has been finished with shellac, although it also works very favorably on other type finishes.

Take two-thirds of a bucket of warm water and mix approximately a cup of powdered oxalic acid in it. Remember to use rubber gloves. Stir until dissolved. Add approximately a quart of wood alcohol (or solvent for shellac). Mix well and scrub the floor (as described before with paint thinner). This does more than remove the wax. Much surface finish is removed also. At the same time, the oxalic acid goes down into the pores of the wood and bleaches it. This method is not as effective as "spot sanding" but it is much easier and it looks almost as well. Be sure that the areas are perfectly dry before applying a series of finish coats.

Sometimes it is desirable to refinish floors without sanding. Let me make it clear that no other process of refinishing can achieve the newness obtained by resanding a floor. However, when one does not wish the expense of sanding nor the inconvenience of the dust, etc., the next best then is to clean the floor chemically. Many preparations are made for this job. But I shall mention only two universal methods. The last method given of water, alcohol and oxalic acid is a good safe method to use. However, it does not remove all finish unless much "elbow grease" is used. Another very effective method which must be used with great caution is based on the use of lye.

It would be best if two persons worked together in one room at a

(Continued on Page 57)

Put your Child on a Book End

EARL CORBLY

BOOK ENDS with a sentimental value as well as being decorative and useful can be made from two posed photo cutouts of your son or daughter in his or her favorite sport or activity.

From the posed snapshot negatives have two 5-by-7 enlargements made. This size will make an upright figure about 6½ inches tall, which is just right for a book end decoration. Have glossy black and white prints made if you are not going to color the figures. If you want to color the figures in authentic school or club colors with photo coloring paints, have dull black and white prints made.

Since both feet of the figure in the photos will not be on a horizontal plane, it is necessary to mark out a base on the bottom of the figure so that it can be attached firmly to the book end base pieces.

Now very carefully cut out the figures with the marked-on base from the photos, being sure to follow exactly the figure outlines so that the finished figures will look natural. Next, lay the picture cutouts on a piece of ½-inch thick plywood and mark around the cutouts.

Now cut out the plywood figures with a coping saw or power jig saw. Since the plywood cutouts must exactly fit the photo cutouts, take plenty of time for this job. After the plywood figures have been cut out and sanded, the photo cutouts should be glued to them and placed under a weight until the glue is thoroughly dry. If you plan to color the figures with photo coloring paints, this should be done after they are glued to the ½-inch thick plywood cutouts and before the figures are joined to the book end bases.

The book end sections are made from ⅝-inch thick plywood remnants as dimensioned in the drawing. Each book end has a base section 6¼ inches long and 5½ inches wide, and an upright section 7¼ inches high

and 5½ inches wide. The upright piece is attached to the base section with wood glue and 3 finish nails.

After the two book ends have been assembled, they should be sanded and given a coat of paste wood filler. Two coats of clear varnish then make an attractive finish.

The figures should now be joined to the base sections of the book ends. A flathead wood screw 1½ inches 8 gauge is inserted up through a hole in the base of the book end into the base of the figure. Be sure and countersink the head of the screw so that the bottom of the book end base will be smooth.

A pair of these book ends adds a personal touch in your home, and you can be sure that your son or daughter will be proud to appear on them.

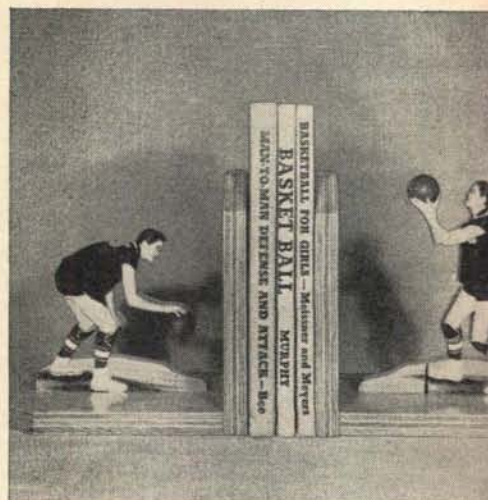
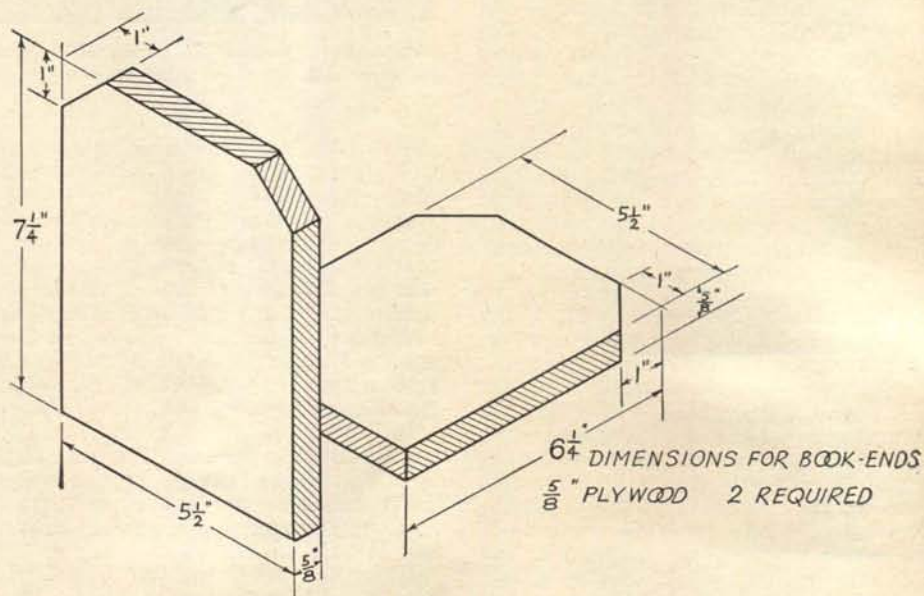


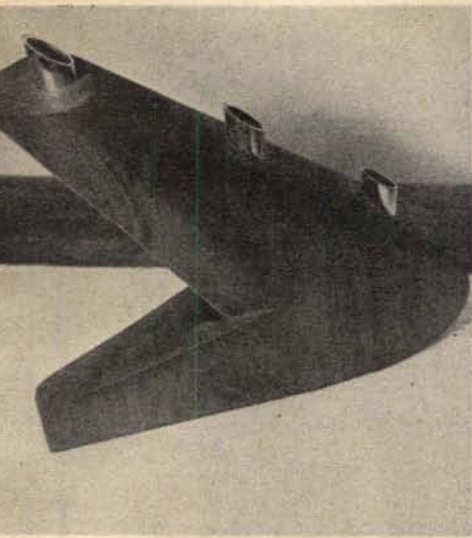
PHOTO CUTOUTS, preferably colored, showing your child in his or her favorite athletic activity, are the unique feature of book ends like these.



With its smart lines, this candelabrum is just the thing to place atop one of your pieces of modern furniture.

A Candelabrum *in the modern manner*

DONALD X. FENTEN



PHOTOGRAPH 1—Brass and walnut are combined in this trim and distinctive candelabrum.

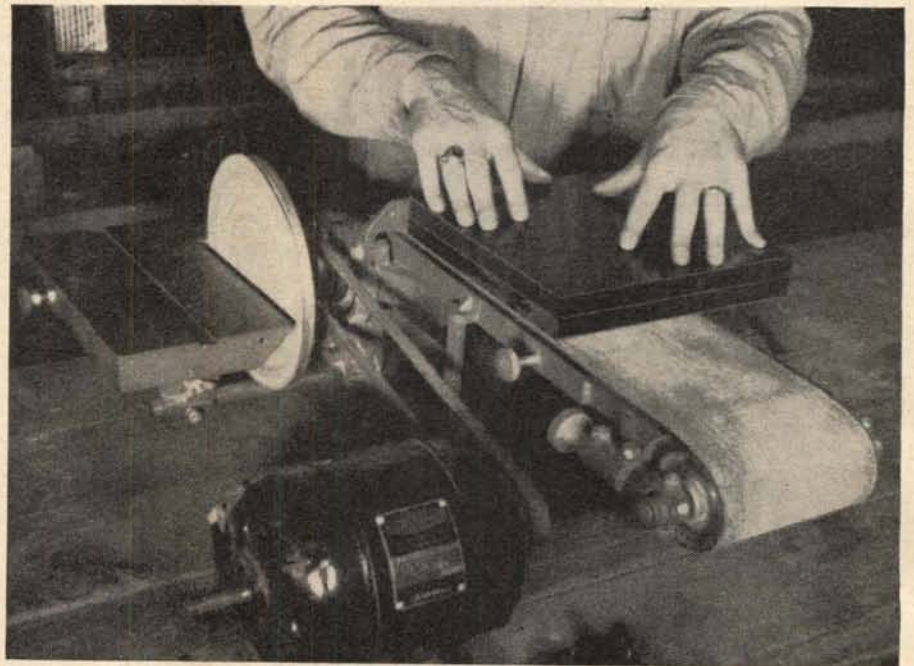
MODERN FURNITURE is beautiful in itself, but it is often the small accessories that make the modern home truly outstanding. An easily made, inexpensive, and truly functional piece of modern decoration is this walnut and brass candelabrum (Photograph 1).

Utilizing two of the most sought after materials in modern decoration, the candelabrum is constructed from one piece of black walnut, 2" x 12" x 12", and one piece of solid brass pipe, 6" long, $\frac{3}{4}$ " O.D.

One face of the walnut block should be surfaced so that the exact direction of the wood grain can be determined (Photograph 2). When the face is as clear as possible, lay out the pattern for the candelabrum, using the direction and beauty of the grain to best advantage. Included in the pattern layout is a special drawing (see drawing A) for the boring of the holes, since this will be done on an inclined plane.

While a band saw was found to be best for rough cutting the 2" thick block to shape (Photograph 3), other saws may be used. The ledges, laid out for the holes, should be left for the boring which follows. Using a $\frac{3}{4}$ " auger bit, No. 12, bore a hole into each ledge to the desired depth. It is important that the holes be drilled to the same depth, so that when the brass holders are inserted they will line up in a matching plane with the base. To insure accuracy in boring to a given depth, use either a bit stop, or if it isn't available, a piece of tape on the auger bit marking the depth will do just as well.

Resume cutting the block to its final rough shape by removing the ledges. Rough out the tapered sides using chisels, files, or a drawknife. Once again the grain of the wood is important. While tapering the sides, the grain should be inspected, so chipping, which would cause a defect in the finished article, can be



PHOTOGRAPH 2—Sand the surface of the walnut block to be used in the candelabrum so that the exact direction of the wood grain can be determined.

prevented. The front leading edge of the piece should be rounded with a plane.

Begin sanding the rough shape using garnet paper, No. 1, 1/0, 3/0, and finally 5/0. In order to remove the sawdust, wipe with a soft cloth moistened with turpentine. After the base has dried, rub with boiled linseed oil until the desired dull satin finish appears. Any other standard finish may be used.

WITH THE base finished, the next step is to cut, shape, and polish the brass candleholders. In order to determine the proper angle, cut out drawing B and mark off the angle, by measuring the length of the front and back, and then marking this

line with a piece of tape. To save time, use the reverse of one of the holders for the top angle of the second. However, it should be noted that the pieces must be cut carefully so as not to mar the pipe and make it necessary to cut an additional piece.

Draw file the front tapered surface to a smooth finish. To eliminate completely the file marks, rub the edges with emery cloth. This operation must continue until all file marks are gone.

To the bottom of each of the candleholders solder a piece of scrap metal, either brass, copper, or tin plate. Trim off all the excess metal so the newly soldered base fits flush to the outside diameter of the pipe. The base is put on the candleholder to

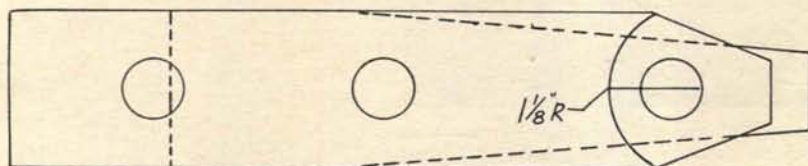
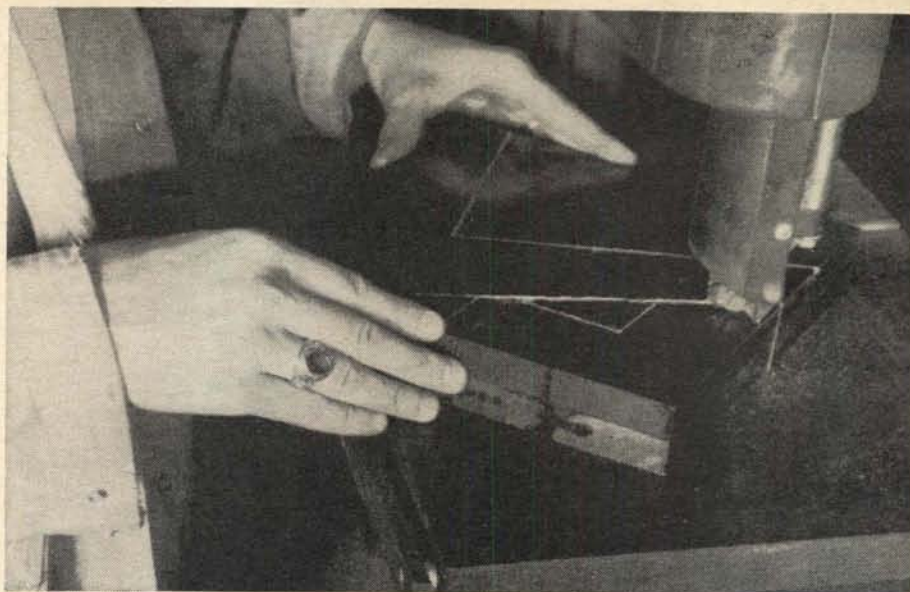
make sure that the candle, as it burns down, does not burn the wood.

Polish the brass holders to a high luster by using brass polish or a buffing machine. To give the holders a protective finish, spray or dip them in clear lacquer. The lacquer will protect the high luster of the holders.

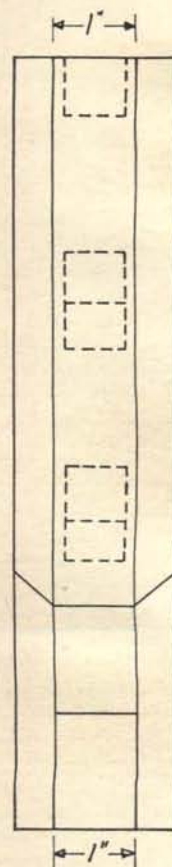
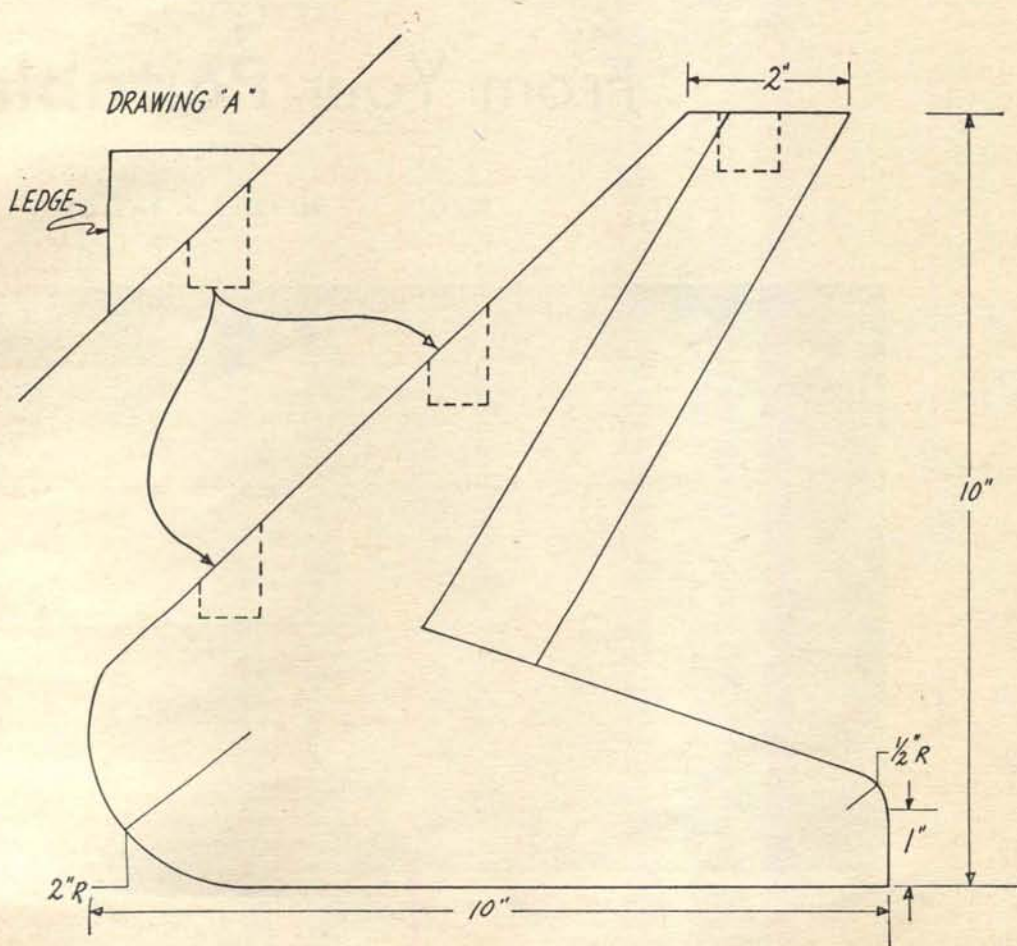
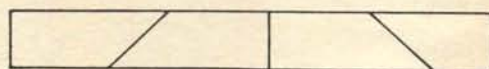
Insert the brass candleholders into the holes bored in the base. If the holders do not fit snugly into the holes, a small hole can be drilled in the base of the brass holders, and a small wood screw screwed in to fasten the holder in place.

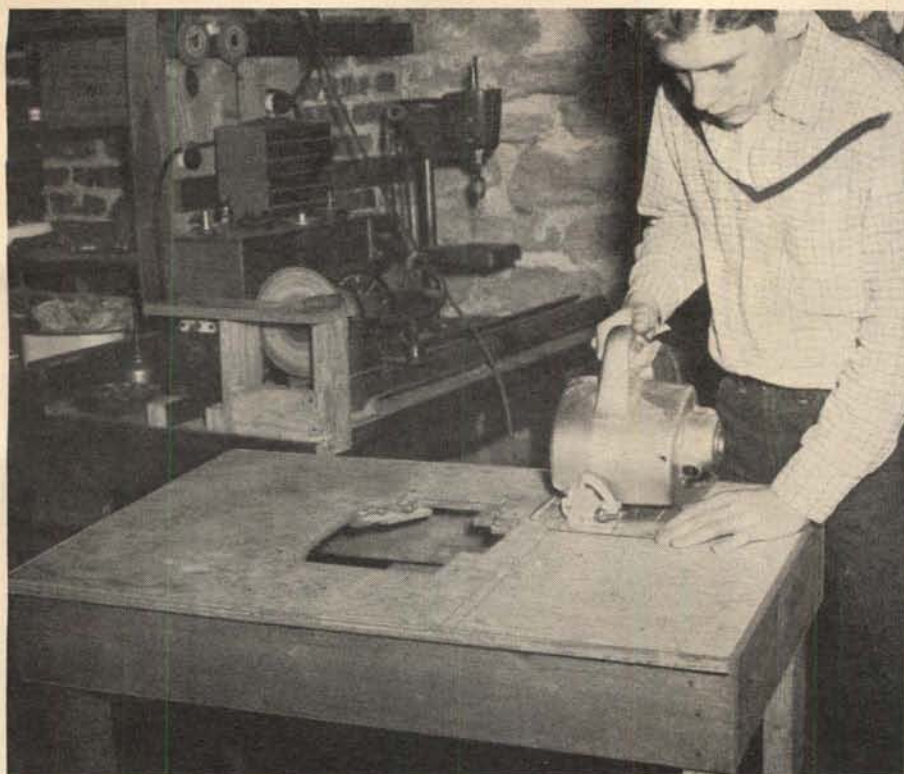
A piece of felt glued to the bottom of the completed candelabrum will keep it from marring any smooth finished furniture, for it is atop your most modern and finest piece of furniture that your modern, walnut and brass candelabrum will draw admiring glances.

PHOTOGRAPH 3—Following the lines of the pattern, the block of walnut is rough cut to shape.



DRAWING "B"





PHOTOGRAPH 1—Cutting the groove for the miter gage. Prior to this operation the saw must be set in the bed already inset in the table top and the location of the groove established by measuring from either end of the saw blade. This assures that the groove will be exactly parallel to the blade.

Converting a portable power saw to a table saw adds to the tool's versatility—and you can still use it as a portable.

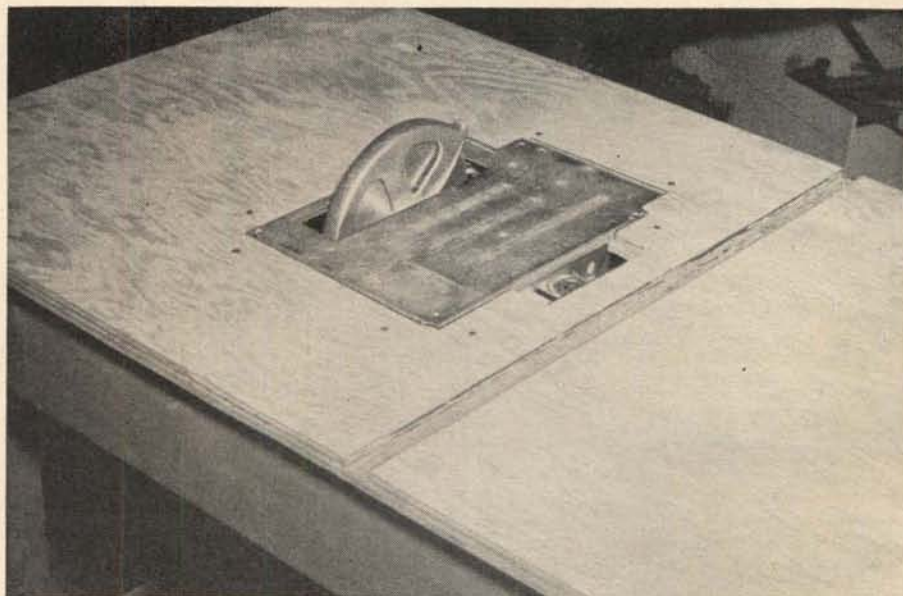
You Can Make A Table Saw From Your Portable

WEBSTER P. TAYLOR

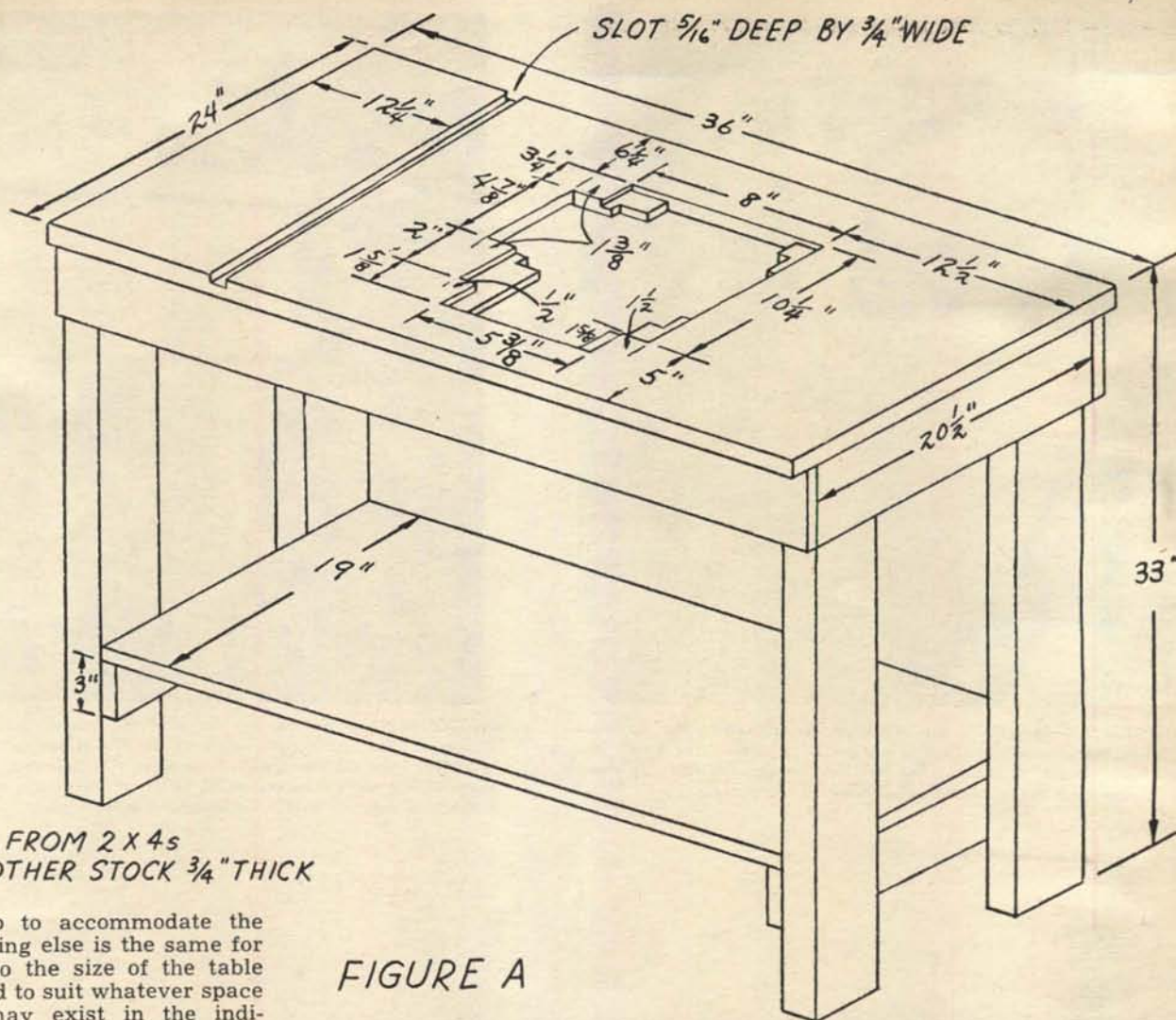
NOW THAT you've finished that house of your dreams or the special addition which made your home more livable, don't feel you have obtained full use out of your portable electric hand saw. It may have paid for itself many times over in the money it has saved you on labor during that big construction or expansion job but by converting it to a table saw for use in your shop it will continue to pay dividends in time saved and more accurate work and may still be used for outside jobs when the occasion arises.

Here is an easy, inexpensive way to accomplish such conversion and at the same time give yourself the satisfaction of having added to your shop a valuable power tool than can handle a great variety of fine cabinet work.

While the conversion shown was applied to a Craftsman saw, the same plans can be used for any power saw, the only modification necessary being in the shape of the opening cut in



PHOTOGRAPH 2—The saw in place in the table top. The square opening to the right is necessary to permit the motor housing to clear the top. This opening is later covered with the sheet of aluminum which serves as the top.



NOTE:

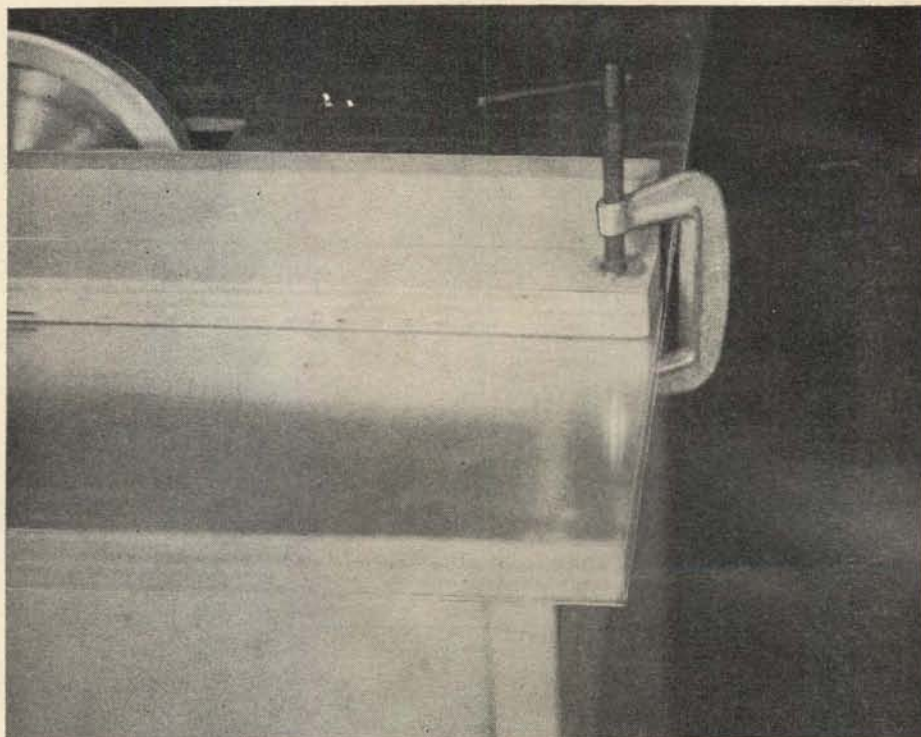
1. LEGS FROM 2 X 4s
2. ALL OTHER STOCK 3/4" THICK

the table top to accommodate the saw. Everything else is the same for any saw. Also the size of the table may be varied to suit whatever space limitations may exist in the individual shop.

The material used was all 3/4" with the exception of the table legs which were made from two by fours. Plywood was used for the table top base for several reasons. It is easier to work from the standpoint of the type of inletting necessary to recess the saw platform and the miter gage, it does not warp and it provides a completely flat surface for the aluminum sheet top.

IN PERFORMING the inletting for both the miter gage and the saw bed, the laminations of the plywood are peeled off with a chisel until the proper depth is obtained. In the case of the groove for the guide of the miter gage, the initial cut is made with the power saw while in the case of the supports for the saw in the corners of the opening in the table top, the cuts are made through succeeding layers of laminations with a sharp chisel. The laminations being of uniform thickness assures even depth at all points of support, an important consideration. Support is made more positive by attaching a series of small braces angularly across the points of support underneath the table top. The groove for the miter gage (Photograph 1) should not be cut until after the saw has been

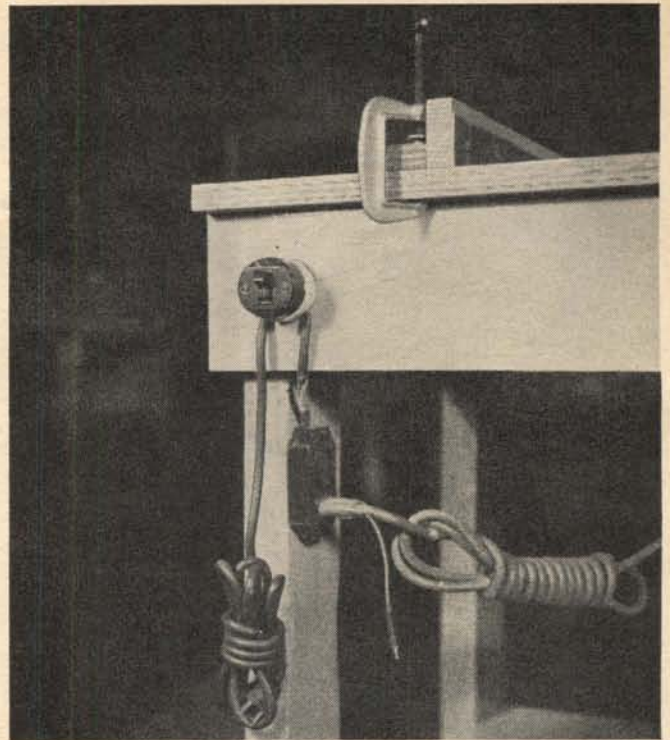
FIGURE A



PHOTOGRAPH 3—A split washer was used to hold this C-clamp in place on the rip fence. Having the clamp fixed permanently facilitates the anchoring of the fence and the clamps are never misplaced.

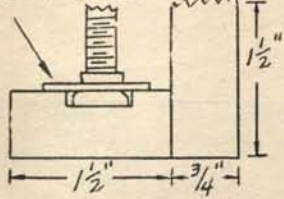


PHOTOGRAPH 4—In scribing the reference line for setting the rip fence parallel to the saw blade, place a straight edge against the blade and anchor with clamps. A straight line can then be scribed with any sharp pointed tool from the blade to either edge of the table.



PHOTOGRAPH 5—By making the electrical connections as shown and taping or tying the trigger switch of the saw closed, none of the saw's versatility from the standpoint of portability is impaired. If a permanent connection is made from the switch to the power source, the extra plug-in connection becomes useful for attaching other tools.

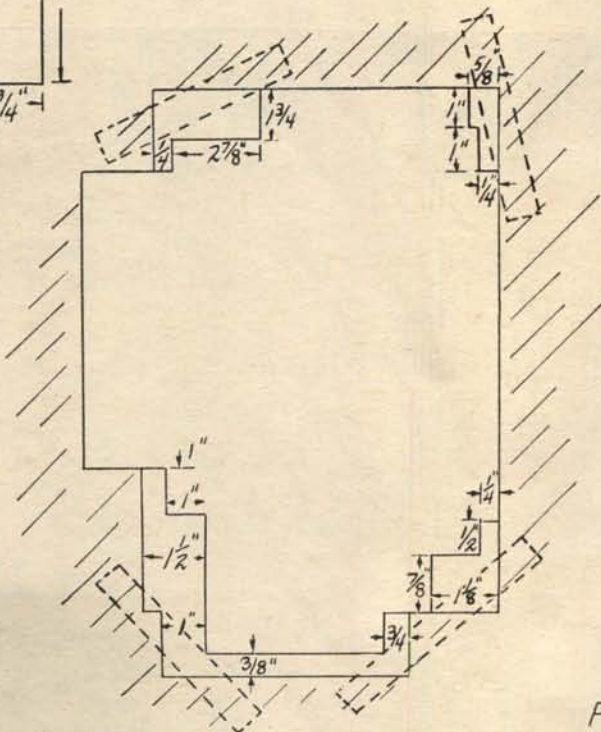
SPLIT WASHER



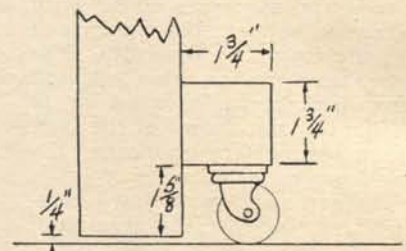
HOW CLAMP IS SET IN BASE OF RIP FENCE



SPLIT WASHER



INLETED SECTIONS IN OPENING TO PROVIDE BED FOR SAW. ADDITIONAL SUPPORT IS GIVEN BY PIECES SHOWN BY DOTTED LINES.



DETAIL OF CASTERS ON REAR LEGS. HEIGHT OF SUPPORT (1 3/8") DETERMINED BY TYPE OF CASTER USED.

FIGURE B



PHOTOGRAPH 6—Making a 90-degree or square end cut using the adjustable foot on the miter gage. This makes possible more than one cutting to the desired length without additional measuring.



PHOTOGRAPH 7—Using the rip fence to cut a board lengthwise to width. A piece of sheet aluminum as facing on the fence makes the operation more efficient and eliminates wear and splintering.

fitted into the opening in the top. The reason for this is that after the saw has been set in the top the miter gage groove can be laid out completely parallel to the saw blade by making measurements from each end of the blade itself. When the groove is cut be sure to allow for the thickness of the aluminum sheet which will be placed on the top. The one shown is $1/16$ " thick and if the miter gage guide is $3/8$ " thick, as most of them are, the groove in the plywood should not be less than $5/16$ " deep. If it is, the gage will not rest flat on the table top and will rock. Furthermore, a piece of wood which would be long enough to extend across the groove would rest on the guide instead of flat on the table top and when cut would not be square on the end. After the miter gage groove has been cut the saw may be placed back in the bed (Photograph 2).

The rip fence is faced with a strip of aluminum and is tightened to the table top by means of two C-clamps. These clamps may be secured to the base of the rip fence by either of two methods. One is by using screen hangers and the other by splitting a washer and drilling a hole in the base of the rip fence large enough to accommodate the free moving foot of the C-clamp. (See Photograph 3 and Figure B). The latter method is recommended as it makes a neater job and the particular type of screen hanger necessary is difficult to obtain.

In order to set the rip fence, a straight edge is placed against the saw blade and a reference line scribed in the aluminum top from the opening for the blade to either

side of the table (Photograph 4). While this necessitates measuring from the reference line to each end of the rip fence, it is far less tedious than trying to scribe into the table top on either side the necessary graduations and in all probability is far more accurate unless one happens to be a skilled engraver.

ELECTRICAL connections (Photograph 5) were made in such a way that the saw would retain its ready portability in the event it is needed for a construction job. A plug-in socket and switch are provided for plugging in the saw's cord and the trigger switch of the saw itself is taped shut. Therefore when the saw is needed as a portable one the only thing necessary is to remove the aluminum plate and lift the saw from its cradle in the table top.

In the event space is at a premium in the individual's shop, casters are put on the two back legs of the table to facilitate moving the saw from one location to another (Figure B).

While it would be possible to construct an adequate miter gage with a 90-degree protractor and other materials at hand, excellent all-metal miter gages are obtainable at most large hardware stores for from \$5 to \$8 and because of their accuracy and sturdiness are preferable.

The aluminum sheet top is $1/16$ " thick and therefore heavy enough that it will not be wavy. The opening for the saw can be cut out with a jig saw and dimensions should conform to the blade and guard, which may vary in individual cases. The sheets are fastened to the table with small wood screws, the heads being countersunk to make them flush.

The conversion is ideal as it does not take the saw out of service for work where portableness is paramount and adds greatly to the versatility and accuracy of the work which can be done with it in the shop (Photographs 6, 7 and 8). Furthermore, it opens the way to use of other cutting attachments such as dado heads, which are essential for fine cabinet work.

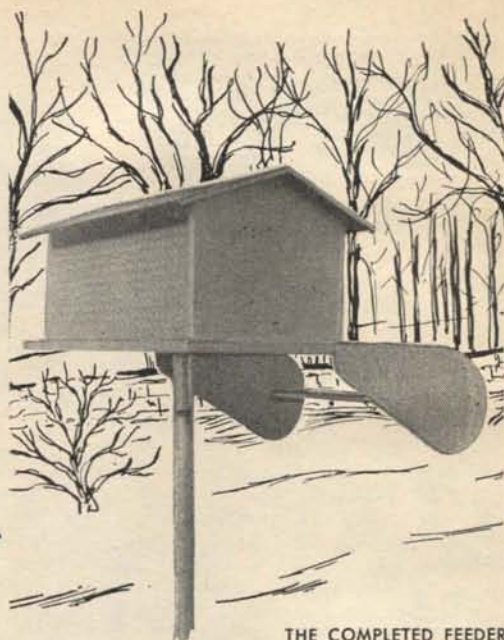


PHOTOGRAPH 8—Using the miter gage for a square end cut without utilizing the foot. Note the casters on the rear legs which facilitate movement of the table from one location to another without dragging.

A Bird Feeder that also Shelters

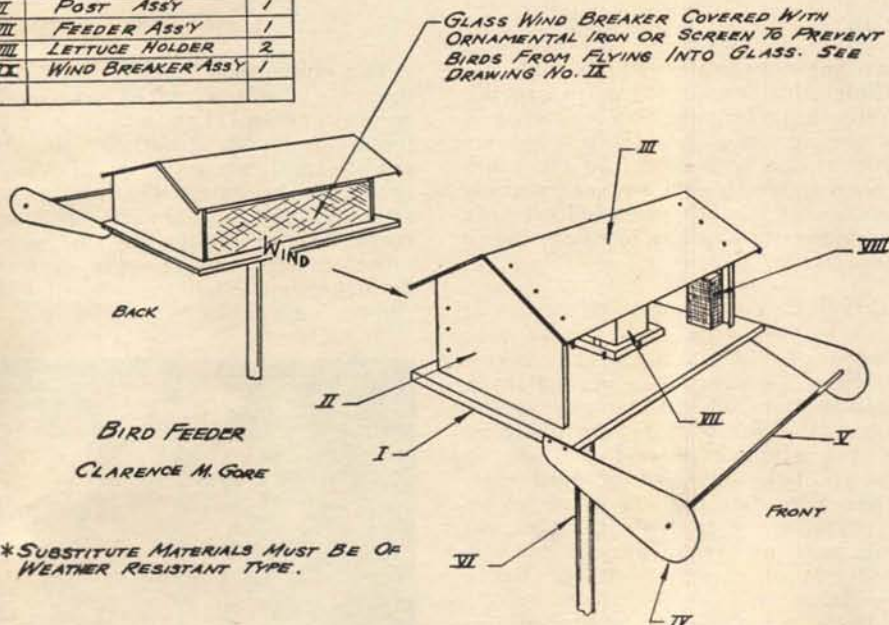
MARTHA ADAMSON

This novel revolving feeder assures protection against bad weather for the birds that use it.

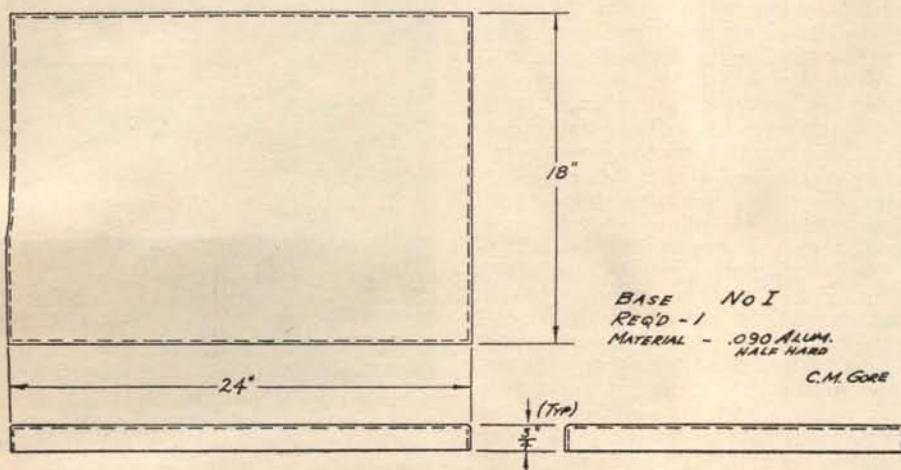


THE COMPLETED FEEDER

No	PARTS LIST DESCRIPTION	REQ'D
I	BASE	1
II	ENDS	2
III	ROOF	1
IV	RUDDERS	2
V	ROOST	1
VI	POST ASSY	1
VII	FEEDER ASSY	1
VIII	LETTUCE HOLDER	2
IX	WIND BREAKER ASSY	1



*SUBSTITUTE MATERIALS MUST BE OF WEATHER RESISTANT TYPE.



HAVE YOU ever wished that the birds in your yard had a place to feed where they would be protected from rain, snow, and sleet no matter which way the wind was blowing?

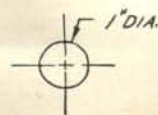
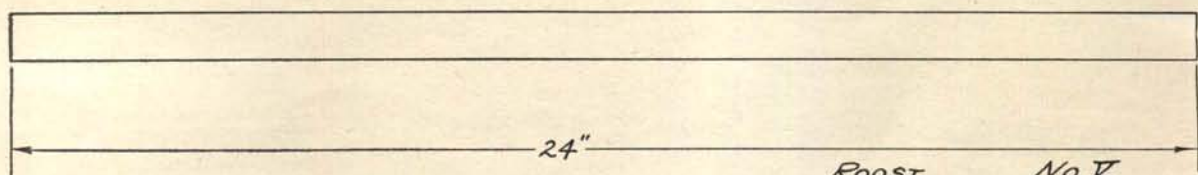
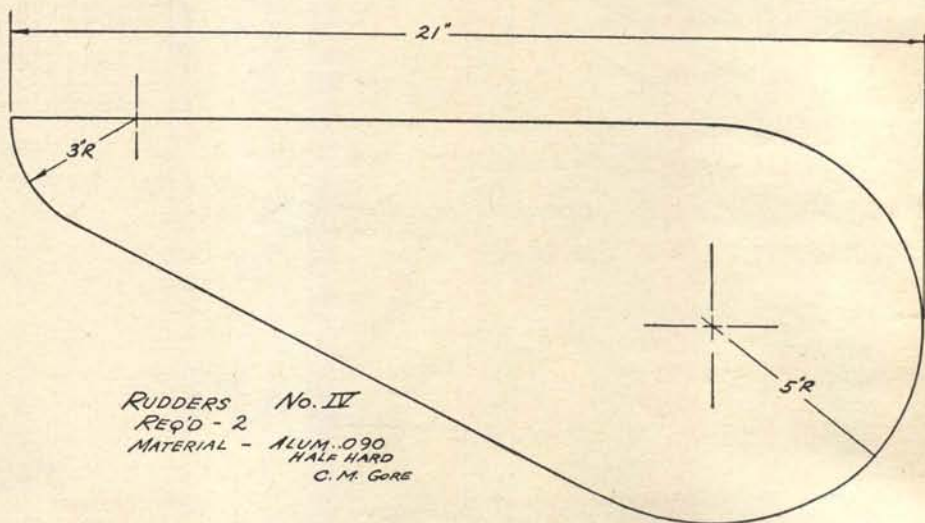
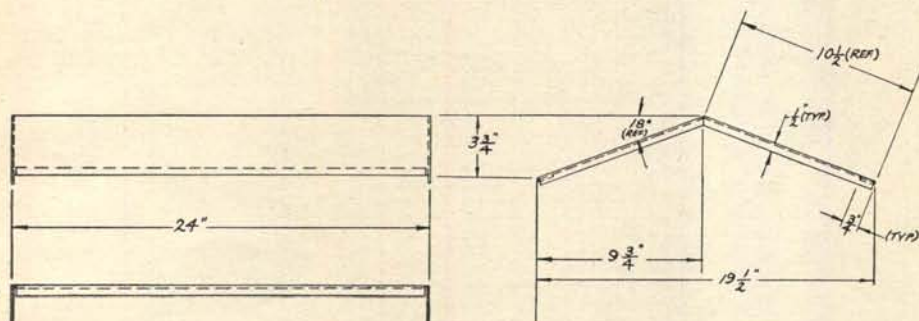
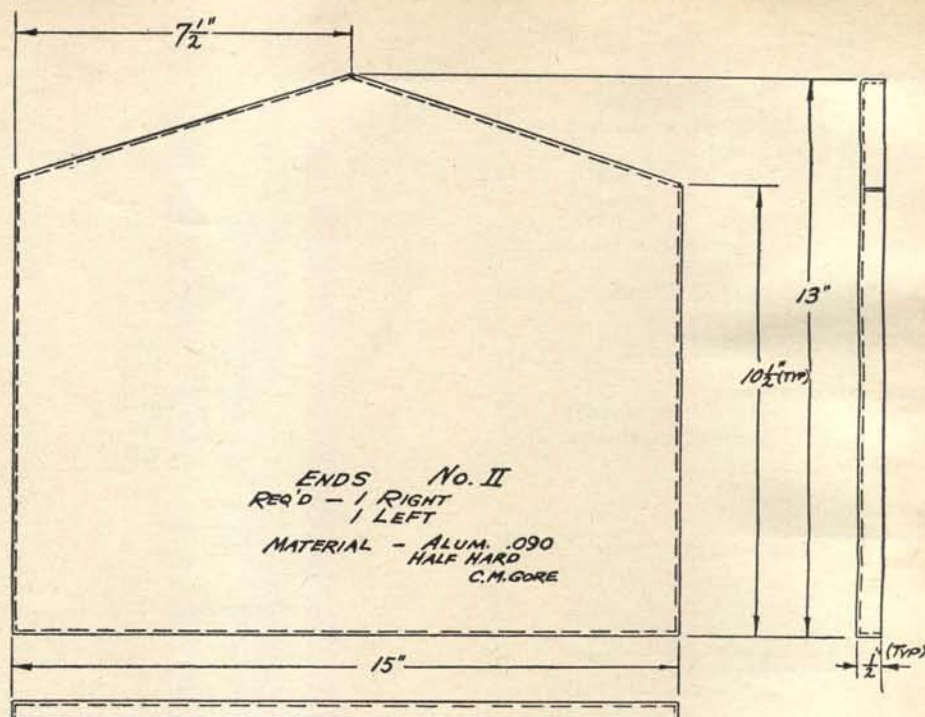
Well, here's the answer furnished by Clarence M. Gore of Kansas City, an ardent bird lover, who is only too happy to pass the idea along. Based on the principle of the windmill, this feeder-shelter automatically turns its glass covered back to the wind. The detailed drawings will show you how to build it, using either 11 gauge aluminum or $\frac{3}{4}$ " plywood, as you prefer. Aluminum calls for welding or bolting the pieces together, whereas with plywood, sixpenny nails will suffice.

For the revolving mechanism in the standard, you may use either a thrust bearing or the simpler method of allowing the shaft to rest upon a steel ball, with either the bearing or the ball held in place by a pin or rivet. If you discover that the winds where you live are so violent as to

cause the shelter to spin unduly, tighten the revolving mechanism. The rudders, fastened to the base or floor at either end, hold the roost securely between them.

The purpose of the wire netting over the glass is to prevent the birds from trying to fly through the glass, which is held in place by retainer brackets. The feeder tray, holding the storage box, is removable so that you may easily fill it with your favorite bird food. The lettuce holder, made of wire mesh on three sides, has a keyhole slot on the solid back so that it may be slipped over a pin in the wall and easily removed for refilling.

If made of plywood, the shelter should, of course, be painted or varnished to protect it from the weather, and here's a chance to add a bright bit of color to the yard. Now, let the winter winds blow. Your birds will feed in comfort.



MATERIALS REQUIRED FOR SHELTER MADE OF PLYWOOD

(Materials for Aluminum Feeder Shown on Drawings)

4' x 8' panel of plywood for floor, ends, roof, and rudders.

10½" x 24" double strength glass for back.

1 linear ft. of ¾" wire netting, 36" wide, to cover glass and make lettuce holder.

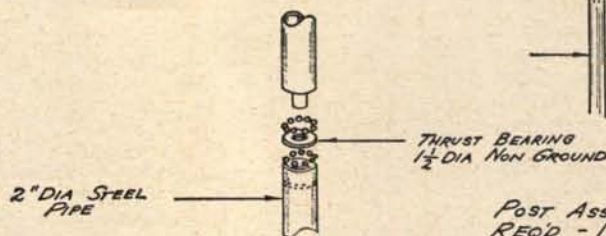
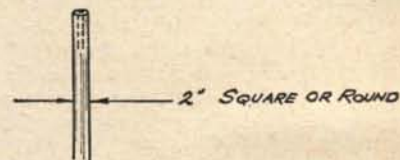
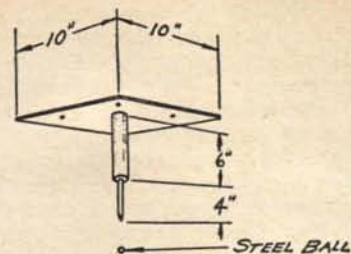
8' 2" metal pipe for standard (wood may be used).

4" long metal shaft.

10" square metal plate if metal standard is used.

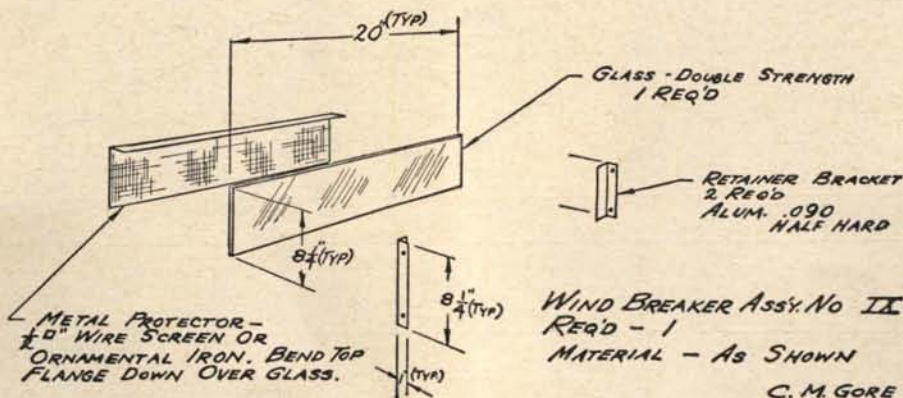
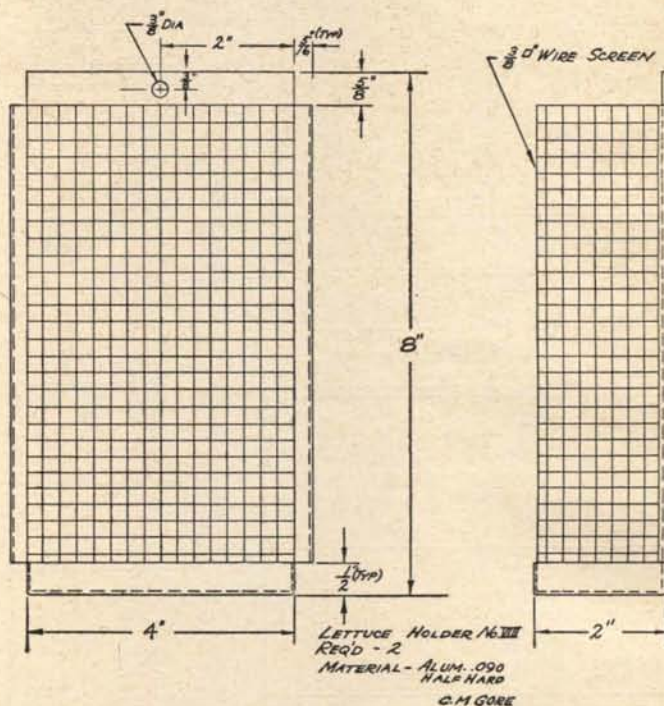
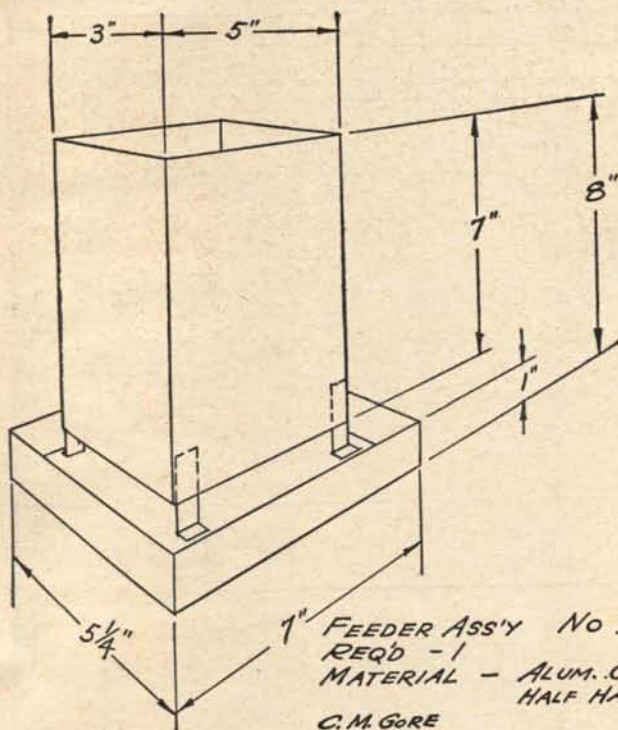
Thrust bearing or steel ball.

¼" or ½" dowling for the perch.



ALTERNATE DESIGN

POST ASSY No VII
REQ'D - 1
MATERIAL - ALUM., STEEL OR WOOD
C.M. GORE



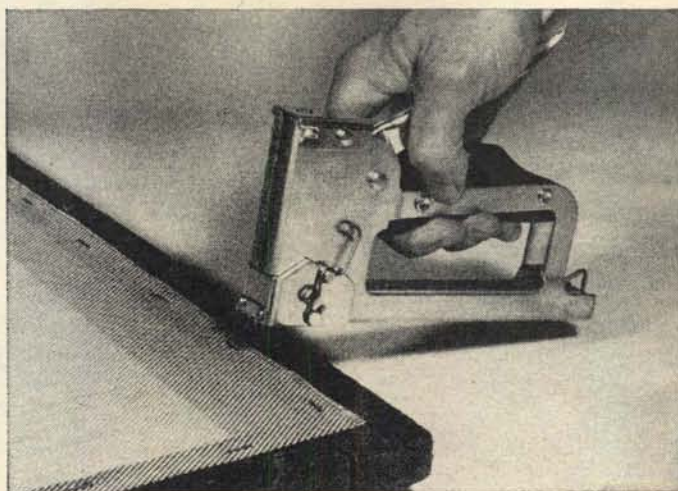
For several uses STAPLING IS FASTER

Ken Murray

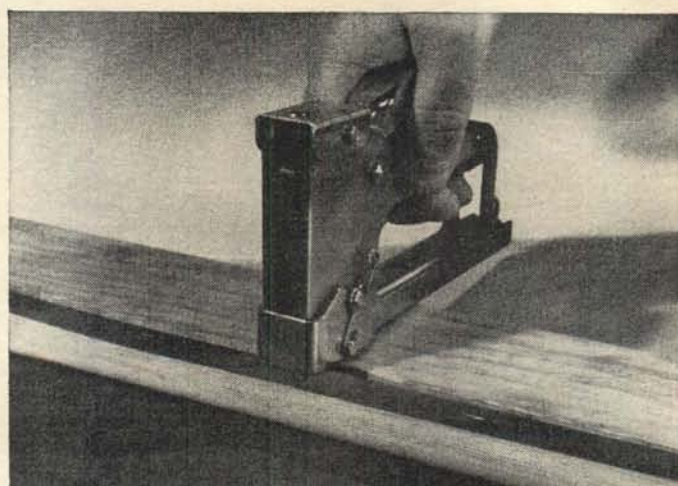


Installing ceiling tile with staples is four to five times faster than other methods. It's much easier than nailing or gluing, there's no danger of damaging the tile and the job has a better finish. First, put up leveled 3" pine furring strips, starting from the center of the room so that tile along the walls will all be the same size. Strips should be 12" on center for 12" x 12" or 12" x 24" tiles, or 8" on center for 16" x 16" or 16" x 32" tiles. Start installing tiles from either the center or the corner of the room. Get the first row up absolutely square, then the remainder will go up properly, too. Use a gun tacker with $\frac{3}{8}$ " rosin-coated staples. Just butt the nose of the tacker against the back edge of the tile "tongue," hold the nose tight against the material and compress the handle of the tacker. The staple is driven securely to hold the tile to the furring strip. Four staples on a side will do the job. The holding power of the $\frac{3}{8}$ " rosin-coated staple is several times greater than that needed for the job.

One hand does it when you stretch and fasten wire screen with a tacker having this simple screen stretcher attachment. Latter is a metal plate having five claws; it is moved out of the way for other types of work. All you do is place the claws in the edge of the screen and pull back to the wood frame. When screen is in position, squeeze the handle of the tacker. Each staple spans several strands of wire to hold tightly. It does not split the wood. To withstand weather conditions, copper and galvanized staples are available.



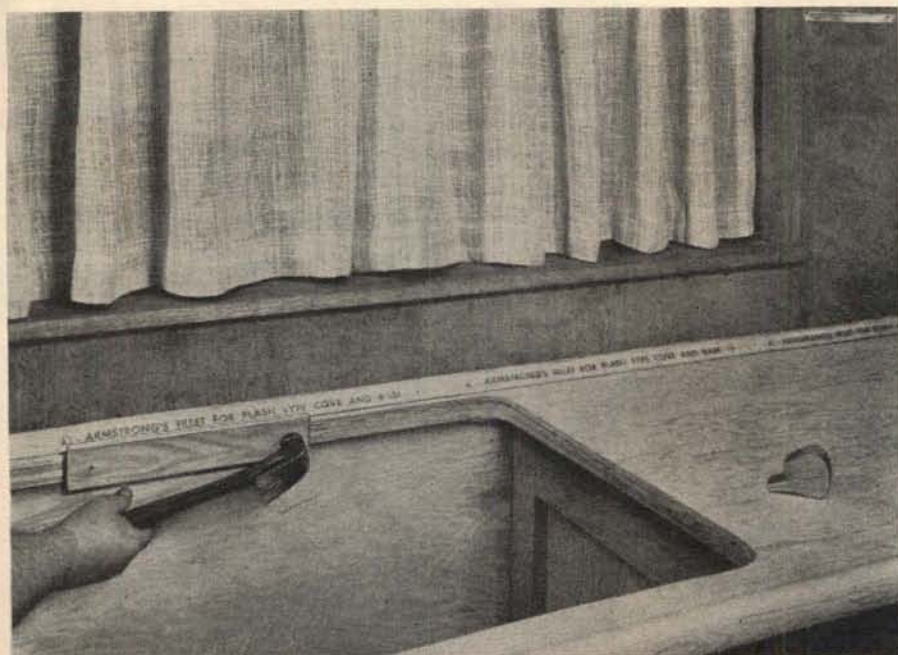
Metal lath cornertite goes up fast with staples, assures a smooth, tight fit. Use long, heavy staples. Unlike nails, they straddle the lath mesh and prevent loosening. Staples become a part of the mesh with no projections to show through the plaster. Special high-carbon staples are available for hard-to-penetrate work, in addition to the gum-dipped (rosin-coated) staples with greater holding power.



Window shades hang better, are less liable to edge-creep, when attached securely to the roller with staples. There is no gummed paper to dry out and loosen, or to wrinkle and cause an edge of the shade to fray against the bracket. Support the tacker on a board (or even a book) to bring it to the level of the roller.

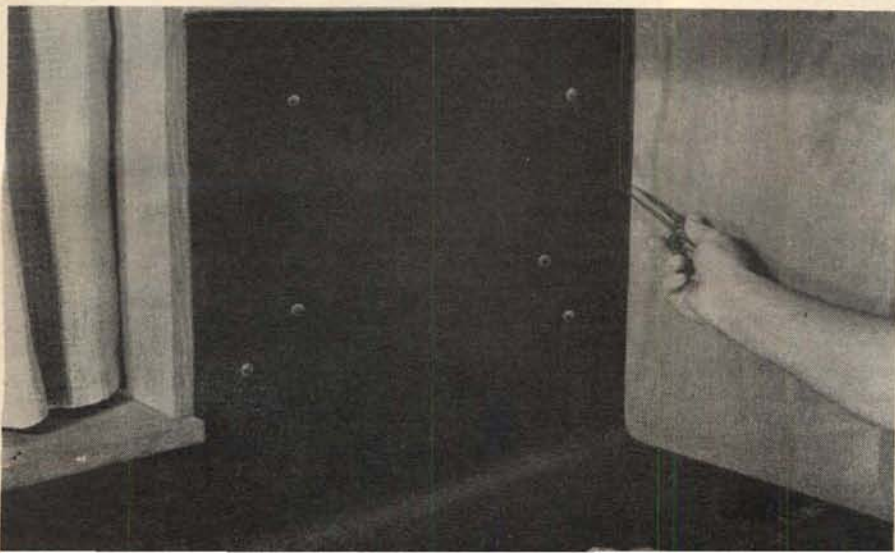
Here's a vinyl plastic surfacing material for countertops and walls that you can install yourself in any one of eight shades.

Brighten your Kitchen with a New Countertop



PHOTOGRAPH 1—Preparing the countertop. Before Plastic Surfacing is installed, metal binding and fillet strip should be attached where needed, and rounded wood molding nailed and glued to front edge of clean, smooth countertop (note cross-section sample of this molding lying on counter). A scrap of wood tacked to the back of the sink opening will serve as a guide for positioning the Plastic Surfacing.

PHOTOGRAPH 2—Making the pattern. A pattern of lining felt or heavy building paper is fitted roughly into place over the countertop and backsplash. Then dividers are used to scribe the true shape of the area to be covered onto the pattern.



THREE TRENDS are running strongly today in the field of home improvement. They involve colorful interiors, easily cleaned and maintained materials and doing the improvements yourself. Exemplifying all three of these trends is a new type of counter and wall surfacing that's colorful, easily maintained and easy to install. In addition, it's comparatively moderate in cost.

The new product, called Plastic Surfacing, is a flexible, vinyl plastic sheet material. It comes in rolls 30" and 42" wide for countertop and wall installation, and in eight softly textured shades that harmonize with the latest as well as the old favorite kitchen and bath colors: pink, yellow, blue, red, white, green, gray and beige.

Plastic Surfacing's all-vinyl formulation resists stains from soaps and detergents, alkalis and other chemicals normally found in homes. According to its manufacturer, the Armstrong Cork Company, it is unharmed by moisture, will not buckle under heat, nor crack from bending and stretching. Being resilient, the material won't shatter under impact from dishes and pans.

The same resilience quiets the noise of dishes clattering on the counter, and lessens the possibility of dish breakage.

In wall installations, the resilience helps to keep impact noise from being transmitted to other rooms.

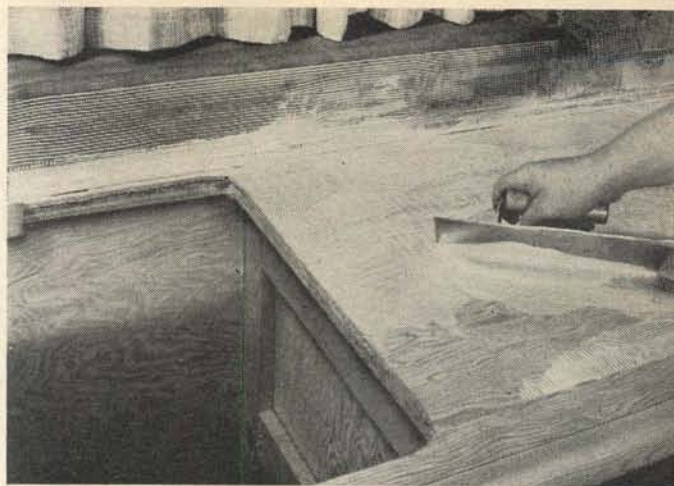
Plastic Surfacing's flexibility makes it possible to run the material across the counter and up the wall in one piece. Professionals call it "flashing" the material, or a "flash cove" countertop.

While it adds an attractive, custom tailored look to the installation, the main purpose of flashing is to provide a smooth, curved corner that's easy to clean.

The material can be flashed over the counter edge, too, in a waterfall effect. The waterfall edge, made by rolling the Plastic Surfacing over a curved wood molding, acts as a dam to keep spilled liquid from running onto the floor and again, forms a dirt-free seam.



PHOTOGRAPH 3—Transferring the pattern. The pattern is laid over the Plastic Surfacing and held in place with tape or cement. Dividers are drawn along each of the scribe marks, transferring the precise outline of the countertop to the Plastic Surfacing. Note that a small hole has been cut into the pattern to admit the sink-opening guide.



PHOTOGRAPH 4—Cementing. After Plastic Surfacing has been cut to exact size required, a notched spreader is used to apply latex-type adhesive to backsplash and countertop, out to a line two inches from the rolled molding. Then Plastic Surfacing is fitted into place and bonded firmly with hand pressure.

This same flexibility makes Plastic Surfacing easy to install. Flat surfaces, such as shelves, table tops and drawer interiors, are a snap. Bathtub enclosures are simple too; Plastic Surfacing is installed as easily as wallpaper. De luxe countertop projects that involve flashing the material up the backsplash and over a waterfall edge are no job for a handyman who's consistently proved himself all thumbs, but can be done in a day or less by anyone who's relatively familiar with tools.

Here's how to go about it:

Preparing the Base

FIRST, REMOVE the sink, built-in burners and the old countertop material,

and sand the top to a clean, smooth surface. If the top is badly warped or deteriorated, it should be replaced with new, $\frac{3}{4}$ " plywood.

Attach metal binding wherever edges of the Plastic Surfacing will be exposed, usually at the ends of the backsplash and at the top of the backsplash along wall spaces where there are no overhead cabinets (Photograph 1).

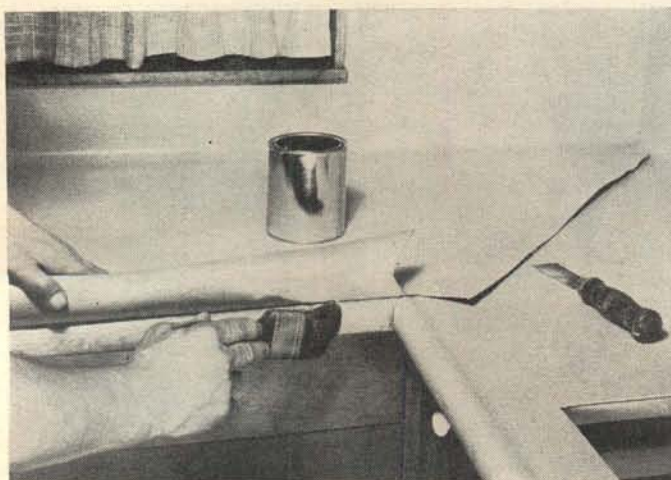
Using a latex type adhesive, cement a concave wax or wood fillet strip along the joint where the countertop meets the backsplash, to form a cove corner. Attach rounded wood molding to the front edge of the countertop as a base for the water-

fall edge and nail a scrap of wood to the back edge of the sink opening, letting it project above the counter to serve as a "fence" or guide for positioning the pattern and later, the Plastic Surfacing.

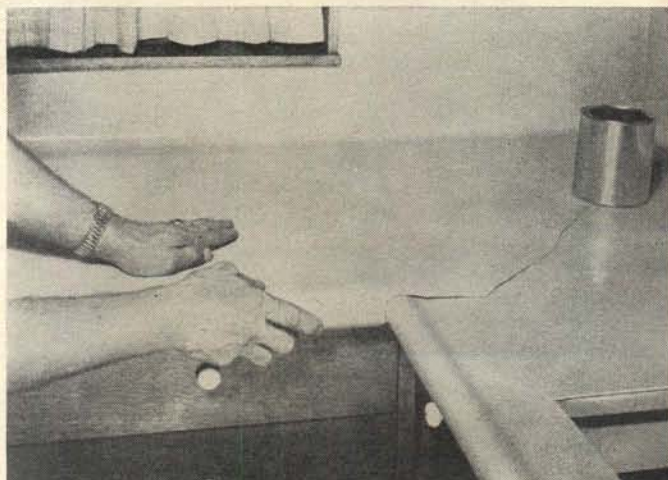
Making the Pattern

A PATTERN of resilient flooring lining felt or heavy building paper is necessary to insure proper fit, particularly where joints occur and where the Plastic Surfacing butts against any surfaces that may not be true, such as the underside of cabinets and window ledges. Make a separate pattern for each section of an "L" or "U" shaped counter.

Cut the pattern roughly to shape



PHOTOGRAPH 5—Cementing waterfall edge. To apply the Plastic Surfacing to the rounded wooden molding, contact bond adhesive is brush applied to both surfaces, then allowed to set. Note that two or three inches of the Plastic Surfacing overlap the first piece installed, at the corner seam; this seam will be mitered later. Opening at right is for built-in burners of kitchen range.



PHOTOGRAPH 6—Bonding waterfall edge. When cement is no longer tacky, material is rolled carefully over the rounded edge, working from top down the front. Material is trimmed away as necessary, to form tightly-fitting corner seam around rolled edge.



PHOTOGRAPH 7—Mitering the corner seam. Before cement on countertop has set, corner seam should be mitered by cutting through both thicknesses of Plastic Surfacing. Then the excess material is stripped away and the cut edges of the seam pressed down into place.

and slightly undersize, keeping all edges about $\frac{1}{4}$ " short of the adjacent walls, window framing and other surfaces. Cut a straight slit in the pattern to permit the wood guide to protrude. Use thumbtacks and tape to hold the pattern securely in place on the counter.

Setting the points of a pair of dividers about $\frac{1}{2}$ " apart, press one point against the surface to be fitted and the other point on the pattern paper. Drawing the tool along the surfaces to be fitted will reproduce their outline on the pattern (Photograph 2).

When the pattern is finished, the scribe lines will represent a "shrunk-en" version of the Plastic Surfacing, since they will be $\frac{1}{2}$ " short on each edge. This $\frac{1}{2}$ " will be made up in

transferring the scribe marks to the actual material.

Cutting the Material

SECURE THE pattern firmly to the Plastic Surfacing with tape or a few daubs of the latex type cement and repeat the scribing procedure, this time with one point of the dividers in the scribe marks on the pattern and the other point pressing in the Plastic Surfacing (Photograph 3).

Using a straight bladed knife or shears, cut the material along the scribed lines. Remember to cut out the hole for the wood guide strip.

Cementing

WITH A fine notched spreader, spread latex type cement on one leg of the countertop and backsplash (Photograph 4). Keep the cement two or three inches back from the molded edge of the countertop. Lay the Plastic Surfacing into place, fitting it into the metal binding and against other surfaces. Smooth out all air bubbles, first with the hand and then with a roller or damp cloth, using sufficient pressure to bond the material firmly to the base.

Roll the uncemented edge of the Plastic Surfacing back to expose the remaining strip of countertop and, with a paintbrush, spread contact bond adhesive on both the exposed wood and the underside of the Plastic Surfacing (Photograph 5). Let the cement dry until it is tack-free to the touch.

Then, with the hands, form the Plastic Surfacing to the molded edge, working from the top down the front (Photograph 6). Extreme caution must be used, since once the cemented surfaces come into contact, they cannot be separated without damaging the material. Inside and outside corners should be seamed during this operation, by cutting

away the excess material as the Plastic Surfacing is rolled over the edge.

Where two legs overlap at an inside corner, the seam between them should be mitered—for neat appearance (Photograph 7). Cut through both thicknesses of material, remove the scrap pieces and press the cut edges into place. Mitering may be accomplished before or after the waterfall edge is formed.

Finishing

CUT OUT the necessary openings (Photograph 8), replace the built-in appliances and install a pressure-type metal sink rim to prevent water from soaking and deteriorating the wood counter. Waxing the Plastic Surfacing isn't necessary, but gives a higher gloss and acts as an added protective layer.

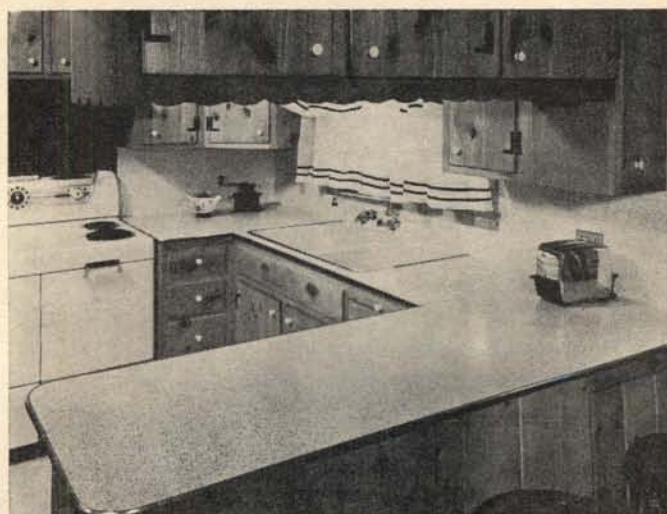
Other Edgings

INSTALLING Plastic Surfacing with a metal rather than a waterfall edge eliminates the water dam, but is far more easy to accomplish, since it also eliminates the cutting and fitting required to seam inside and outside corners along the counter edge (Photograph 9). Preparation, pattern making and material cutting are identical with the methods described, with the exception that the Plastic Surfacing is cut flush with the counter edge. No contact bond cement is needed, the latex cement being spread over the entire countertop.

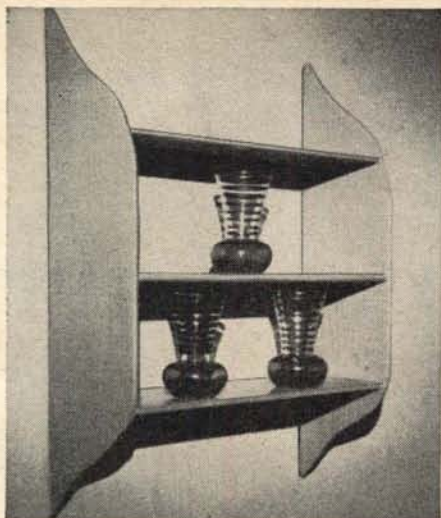
After the material is firmly bonded and the inside corners mitered, the metal edge is installed according to the manufacturer's directions. Of the several types available, the nondrip type is recommended. Wood edgings may be installed, as well, attaching them with adhesives, nails or screws.



PHOTOGRAPH 8—The finished installation. When Plastic Surfacing is bonded completely to countertop, openings are cut into it to permit installation of the sink and range. Plastic Surfacing cut from sink well, and other scrap material, may be used for shelf and drawer linings and as a surfacing for kitchen stepladders, stools and small table tops.



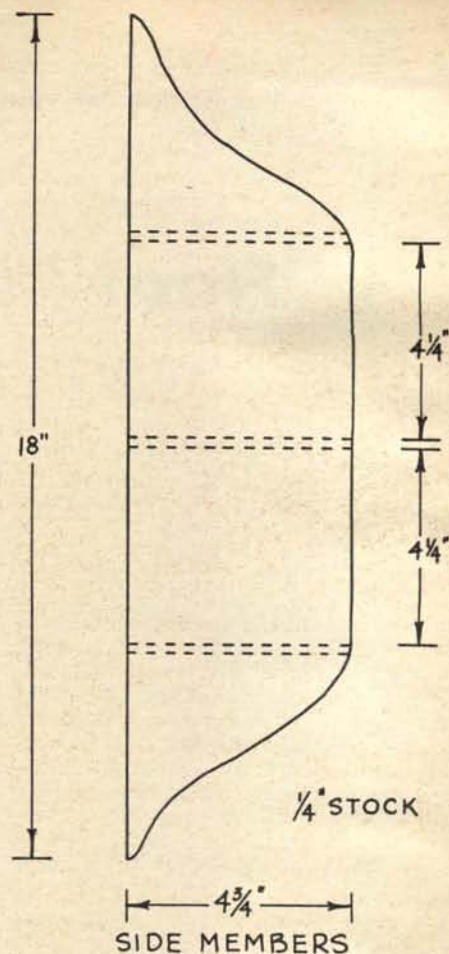
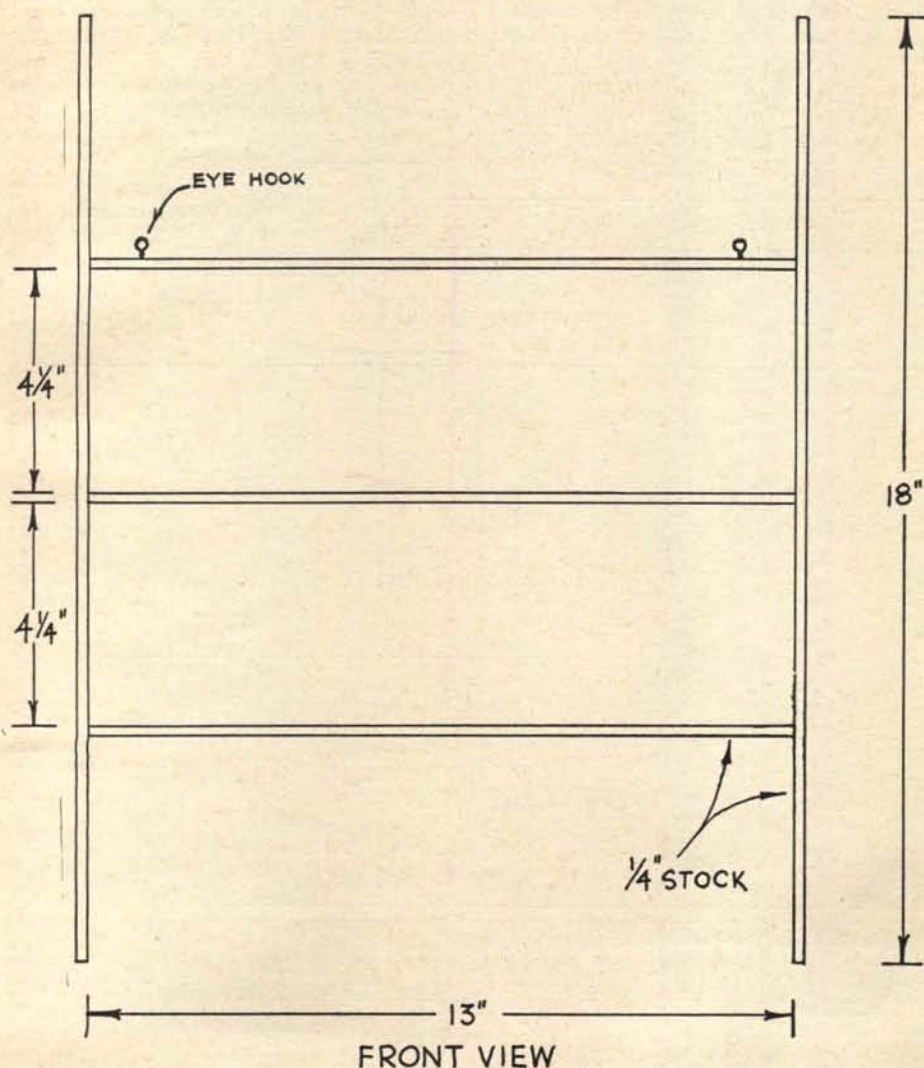
PHOTOGRAPH 9—Use of metal edging. A metal edging strip may be applied to the edge of the countertop, if desired, instead of the rounded wooden molding. Plastic Surfacing is easier to install with this type rather than with the waterfall edge, since it requires less fitting.



COMPLETED SHELF

A SHELF TO DISPLAY *Bric-a-Brac*

JOHN A. COMSTOCK



HERE IS a smart looking shelf that will display your pieces of bric-a-brac to their best advantage. It is easily constructed in one or two leisure hours, using just a hammer, 12" square, and a coping saw.

MATERIALS NEEDED:

1. For side members, 2 pcs. cedar, white pine, or any other wood on hand, $\frac{1}{4}$ " x $4\frac{3}{4}$ " x 18".
2. For horizontal members, 3 pcs. $\frac{1}{4}$ " x $4\frac{3}{4}$ " x 13".
3. Small finishing brads—18.
4. Small screw eyes—2.
5. Sandpaper, medium and fine.
6. Wood glue.
7. Varnish or paint.

PROCEDURE:

1. Lay the design out on the two side members and cut them to shape with the coping saw. If you have a scroll saw so much the better.
2. Saw the horizontal members to the dimensions shown.
3. Nail the side members to the three horizontal members, using brads and glue.
4. Sand all surfaces smooth, using medium and then fine sandpaper.
5. Attach small eye hooks to back edge of top horizontal piece for mounting the shelf to a wall.
6. Finish the shelf optionally with either varnish or paint to contrast with the colors in the room where the shelf is to be used.

Easily and inexpensively installed, this moving light will provide illumination for your workbench just where you want it.

"Float" Light over your Workbench

VICTOR SMITH

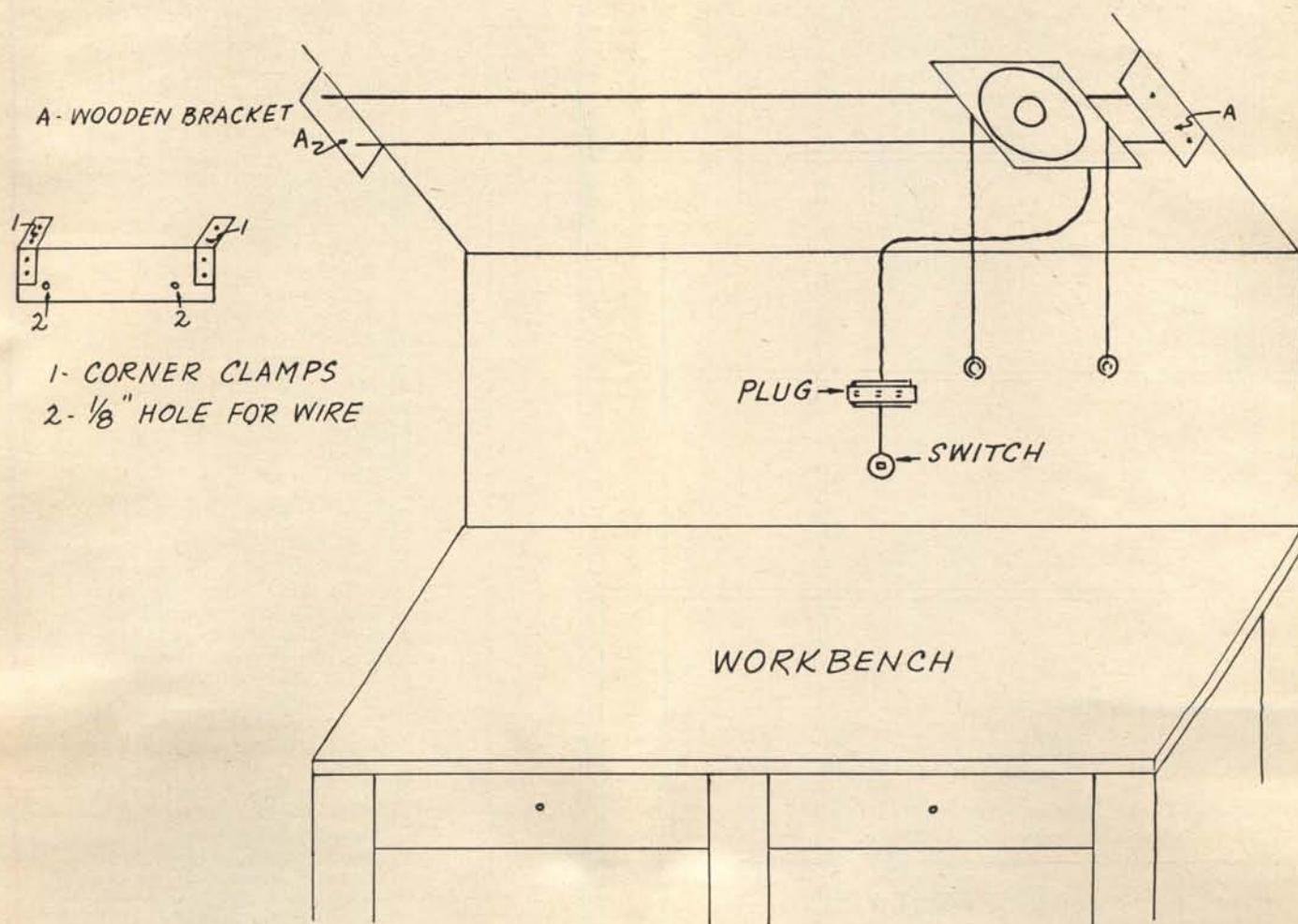
IF YOU have ever worked at a home workbench, the chances are, at one time or another, you have been working at one end of the bench with a power saw or vise or some such stationary tool and wished that the light were a little closer, so that you could see what you were doing. If this is so, you have lots of company, including me. I found my answer in my "floating light." It may be the answer to your problem, too.

To construct such a floating light,

first suspend two wires horizontally across the ceiling about one foot farther than the extreme ends of your workbench. Example: If your workbench is 8' long, the wires would extend 10', projecting one foot farther on either end of the workbench.

The two wires are to be securely anchored to two wooden brackets, which are fastened to the ceiling by means of eight 2" corner (or angle) clamps (that is 2" long and $\frac{3}{8}$ " wide), four for each bracket—two on either

end. The wooden brackets are made by cutting two pieces of wood $2\frac{3}{4}$ " wide and $7\frac{1}{2}$ " long from any $\frac{3}{4}$ " finished lumber. Bore two $\frac{1}{8}$ " holes in each bracket, $\frac{3}{4}$ " from either end, and $\frac{3}{4}$ " from the long side. This will allow the two wires running horizontally to be suspended 2" from the ceiling, and 6" apart. The 2" corner clamps I mentioned above may be purchased reasonably at any hardware store. A good wire to use (and inexpensive, too) is TV antenna "guy



wire," used to hold antennas in place.

The next step is to cut a piece of wood $7\frac{1}{2}$ " x 9" out of any $\frac{3}{4}$ " lumber. (Mine happens to be an old piece of hardwood which I found in the wood pile.)

Screw four small eye hooks two on each side on the 9" sides of your board, $\frac{3}{4}$ " in from the side and $1\frac{1}{2}$ " in from the end. When you finish, two of the eye hooks should be 6" apart from the other two. Your two wires will go through these hooks so that you can pull your light where you need it.

Now, on the opposite side of the board from your eye hooks, screw a porcelain light receptacle in the center of the board, after first boring a hole in the center large enough for the cord and a small porcelain insulator so that you can insulate the cord from the wood to eliminate fire hazard. The insulator should be about $\frac{5}{8}$ " in diameter. The porcelain receptacle should be of the type that has no switch on it, but has a built-in light socket, into which you screw your light bulb. It comes with two screws, so that you can screw the receptacle to your $7\frac{1}{2}$ " x 9" piece of wood. The price for this receptacle is about 50 cents.

Your next step is to get some new electric cord. (Don't use USED electric cord—it's sometimes an expensive economy.) Measure the maximum distance from one wooden bracket (I'm assuming that you have the wooden brackets in place now) to your existing electrical source (or outlet) which, for this particular setup, should be located as near as possible

to the center of your workbench, and which would face you as you face your workbench. Cut your electrical cord for that measurement.

Now your job is to connect one end of your electrical cord to the two connections inside your porcelain receptacle (coming in from the side with the eye hooks in it) and the other end to your existing electrical source (or outlet).

In home electrical wiring (which is A-C or alternating current) there are always two wires and two posts to connect those wires to, and it makes no difference which wire is connected to which post. Your electrical cord will have two wires also, probably twisted like this:



Before connecting your electrical cord **anywhere**, make sure you **PULL THE MAIN SWITCH** for your house electrical current to the **OFF POSITION**, so that no electricity is coming to the wires or posts you are going to work with. **THIS IS IMPORTANT FROM THE SAFETY STANDPOINT!**

To connect an electrical wire to an electrical post or connection, you first remove the insulation (rubber or cloth—covering the bare copper wire) with a knife, for a distance of about $\frac{1}{2}$ " from the end of the wire. Then bend the bare copper wire to the right in the shape of an inverted partial U like this:



Unscrew the posts about three fourths of the way out, place the wire with the bend to the right around the post, and screw it down tightly. The extra cord (when your light is in the center of your workbench) will droop down the side of the wall behind your workbench, and out of your way.

It is a good idea to have the switch, which turns your light on and off, stationary on the wall behind your workbench, rather than on the porcelain receptacle on the board, because pulling the light on and off might loosen your wires or brackets holding the wire to the ceiling.

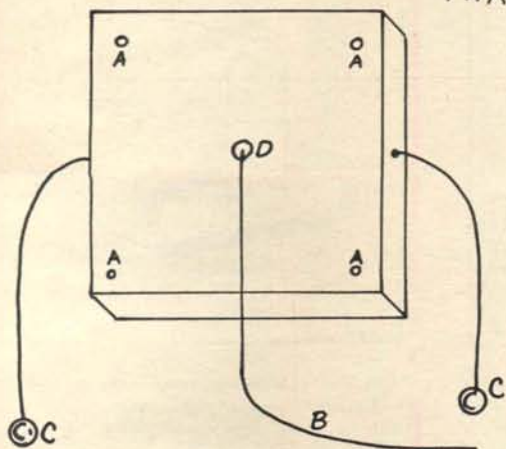
The finishing touch is to attach two short cords (heavy twine will work fine) long enough for you to reach to either end of the board by means of two eye hooks or common small staples, so that you can pull the light to where you want to work. A small metal nut tied to the end of the cords will keep them hanging straight at all times.

I find that the metal light shade eliminates wasted light and gives more light where it will do the most good.

Here's hoping your floating light gives your workbench projects more fascination and the joy of perfection, more easily achieved.

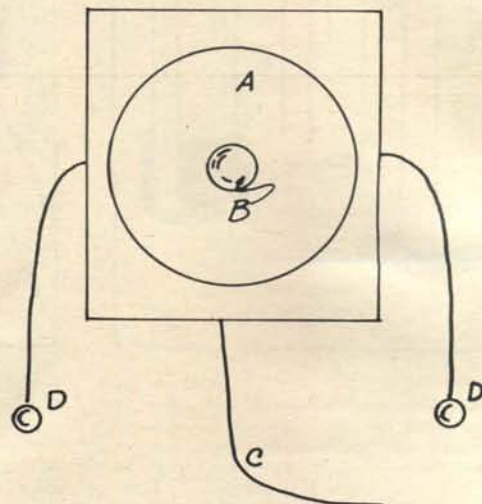
TOP VIEW

- A - SMALL EYE HOOKS
- B - ELECTRIC CORD
- C - CORD FOR PULLING LIGHT
- D - HOLE FOR CORD "B" TO GO THROUGH



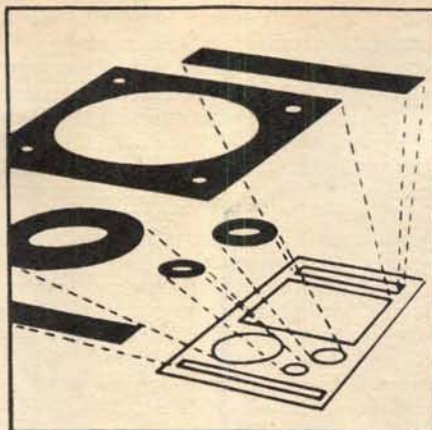
BOTTOM VIEW

- A - SHADE
- B - LAMP
- C - ELECTRIC CORD
- D - PLAIN CORD TO PULL LIGHT

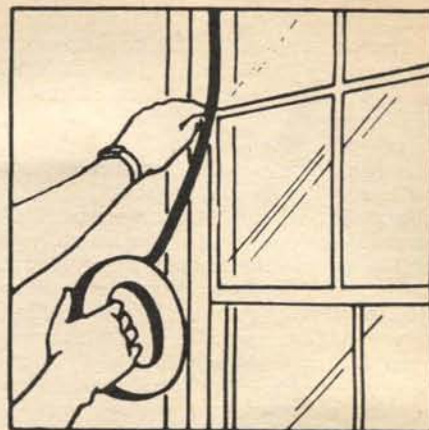




1. APPLY FELT to shop walls to decorate and absorb noise. Tack, staple or apply felt with wheat paste, Pliobond, Geon or Weldwood. Felt is available in many colors.



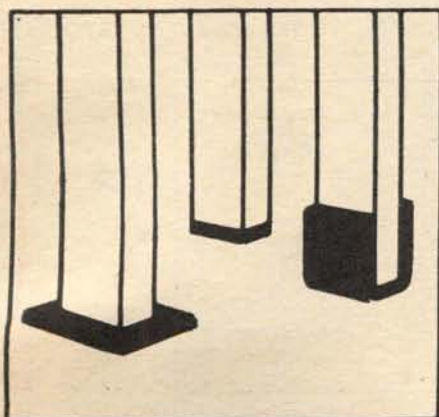
4. CUT WASHERS, seals, strips, wicks, liners and gaskets as you need them from a single piece of felt. SAE specified felts are best for mechanical uses, as they were developed to meet high engineering standards of quality and performance. For special purposes impregnated and laminated felts are available.



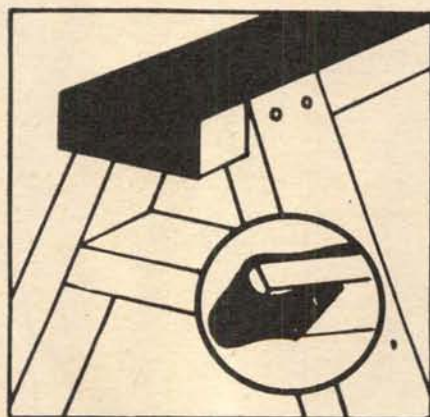
5. WEATHERSTRIP with felt for year-round comfort, to stop cold air drafts in winter and seal in cool air in air-conditioned areas in summer. Felt weatherstripping is tacked, stapled or adhesive bonded to seal window and door cracks. Hardware and lumber dealers carry ready-cut types, or you can custom-cut from yard goods.



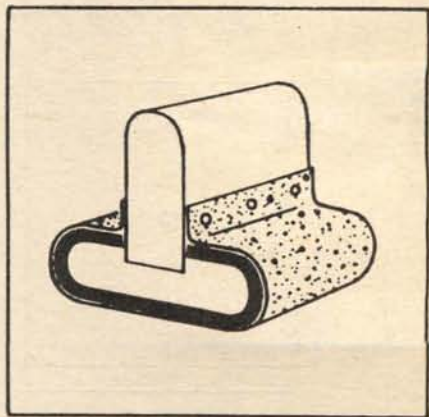
2. PAD BENCH TOP with felt to protect metal equipment from damage and cabinet work from mars and scratches. In metalcraft work, the felt pad deadens hammer and mallet taps.



3. MOUNT BENCH LEGS on felt pads to cut transmitted noise and vibration. Left: Pad is tacked to wood floor or cemented with same adhesive used with concrete. Center: Pad glued to leg. Right: Pad folded over and tacked to leg. Felt thickness $\frac{1}{4}$ " to $\frac{1}{2}$ "; depends on load-weight legs have to support.



6. STRETCH a felt strip across the top of your sawhorses and fasten underneath either by tacking ends to underside of horse, or by hooking into grommet holes. The felt strips protect wood and cabinet work from surface scratches. Also, cover other sharp edges and corners in your shop for added safety and protection.



7. PLACE FELT PAD between sanding block and sandpaper to prevent sharp edges of block from gouging paper into items being sanded. Felt is highly resilient and helps produce a smoother job.

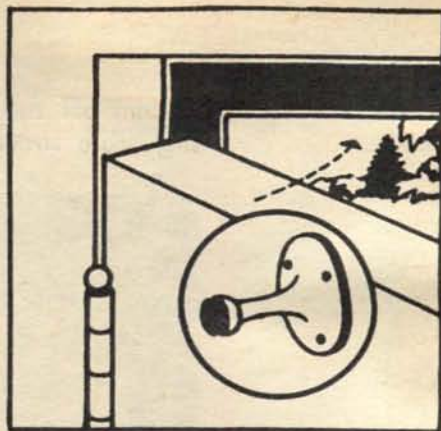
Fourteen Wool Felt Ideas for your Home Shop



8. **BUFF, POLISH** and finish with felt pads attached to hand and bench power tools. Felt wheels are made in all densities from downy soft to as hard as seasoned maple. Heavy duty finishing is done with grit-treated felt wheels.



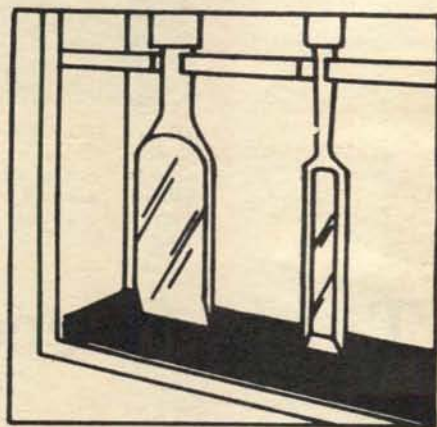
9. **LAYOUT** a shop apron to your own measurements and cut from felt yard goods. Many of the felts such as those your wife uses for skirts, bags and jackets can be used for sturdy aprons, without hemming or binding, as felt doesn't ravel.



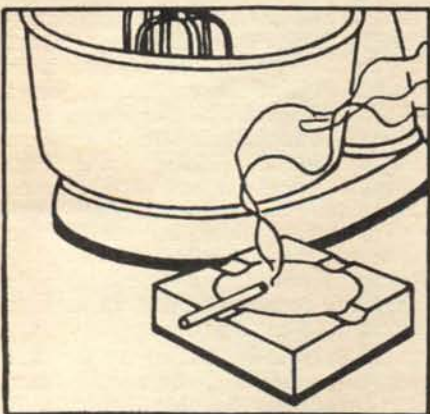
10. **STOP NOISY**, banging doors with felt bumpers and doorstops. Felt is compressible and permanently resilient. Its long life, resistance to oil, grease and acids makes it an ideal material for shop purposes where it stands up under heavy wear.

WOOL FELT, one of industry's most versatile engineering materials, now finds many uses in the home workshop. Felt's do-it-yourself popularity stems from such unique characteristics as:

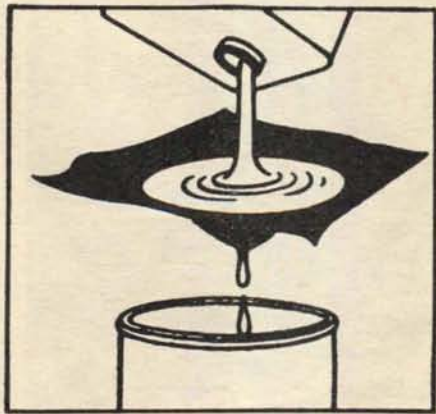
1. Being non-woven it doesn't fray or ravel.
2. It can be cut with scissors, die-cut, punched, chiseled, turned, scarfed and ground.
3. Felt items are easy to fashion since it's available in many densities, thicknesses and qualities, also in adhesive-backed rolls, and in moth-, fungus-, flame-, and mildew-resistant types.
4. The basic felt fiber, wool, is nature's ruggedest. Operative at high and low temperatures, it polishes glass-hard surfaces, withstands oil, hot, cold or salt water, and resists many acids and chemicals.
5. You can use felt to protect, cushion, seal, wick, filter, polish, separate, support and insulate.



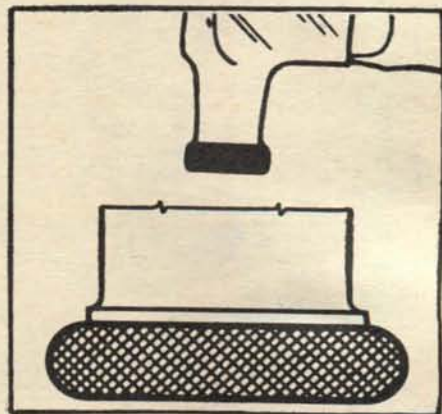
13. **SAVE** the sharp points of chisels from denting and dulling by lining the bottom of tool racks with felt strips.



11. **TRACE AROUND** the bottom of mixers, ash trays, lamp bases and other household items on a piece of felt. Then, cut out and glue pieces to bottoms, or use as base pads to prevent mars and scratches to table and cabinet tops.

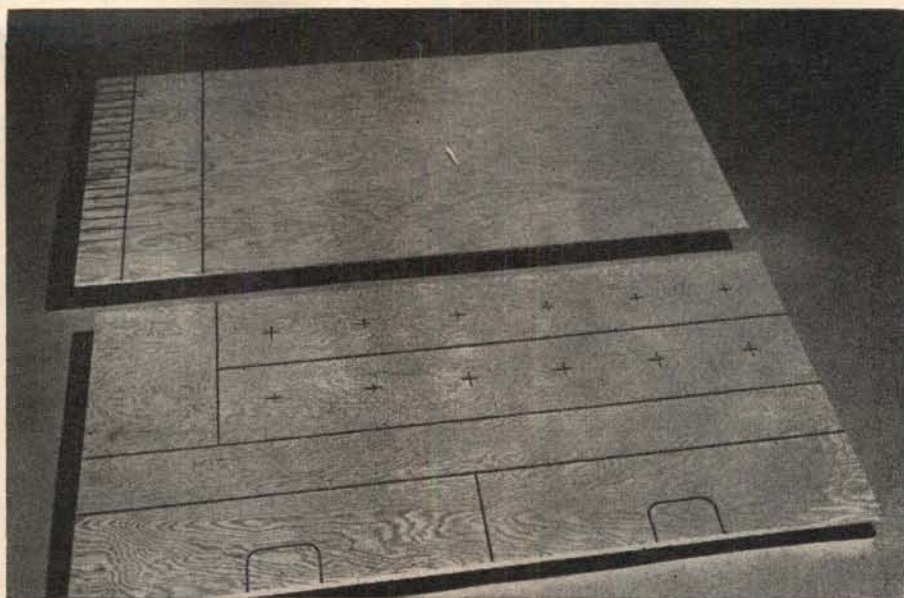


12. **STRAIN** PAINTS, lacquers, and varnishes through felt pieces to remove lumps and other foreign matter that would prevent paint spreading evenly. The felt piece may be washed in any solvent without damage and saved for re-use.



14. **COVER** HAMMER and mallet heads with felt of a firmly felted quality to lessen noise and effects of impact.

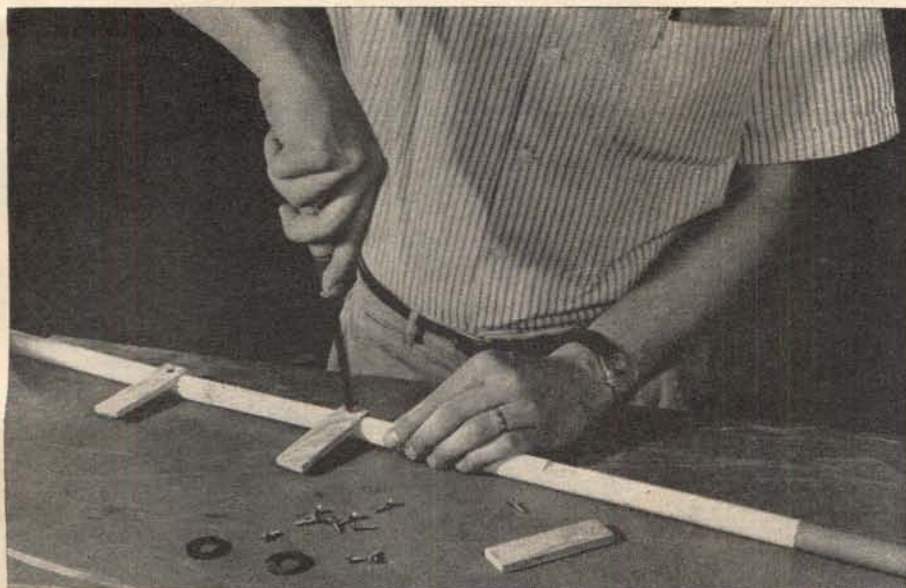
For an off the beaten path workshop project, build this fascinating table soccer game.



ALL THE COMPONENTS of your table soccer game can be cut from two 2x4-foot pieces of fir plywood. These are the Handy Panels available in most lumber stores. This shows the way to mark the cutting diagram on the panels before starting to saw. Top panel in picture supplies bottom of box and all the paddles; bottom panel will provide two sides, two ends. Crosses mark where holes in side are to be drilled.

Table Soccer —

Fun to Build, Fun to Play



FASTENING PADDLES onto dowels looks tricky but really isn't. Flat bed, width of paddle, is chiseled out in dowel; holes are drilled in center of bed and in paddle; and paddles are glued and screwed into place.

HERE'S A table-sized "soccer" game that's fun for the whole family. What's more, you can build it yourself.

This version of the game was originated by Alden Todd of Chevy Chase, Maryland. In simplest terms, it is an open plywood box, resting on a table top. Wooden rods extend across the box through holes in the sides, with enough rod sticking out to form a handle. Each rod has little wooden paddles fastened to it. Players, one, two, or three on each side of the box, attempt to manipulate the rods so that the paddles will bat a table tennis ball toward their goal, a hole at each end of the box.

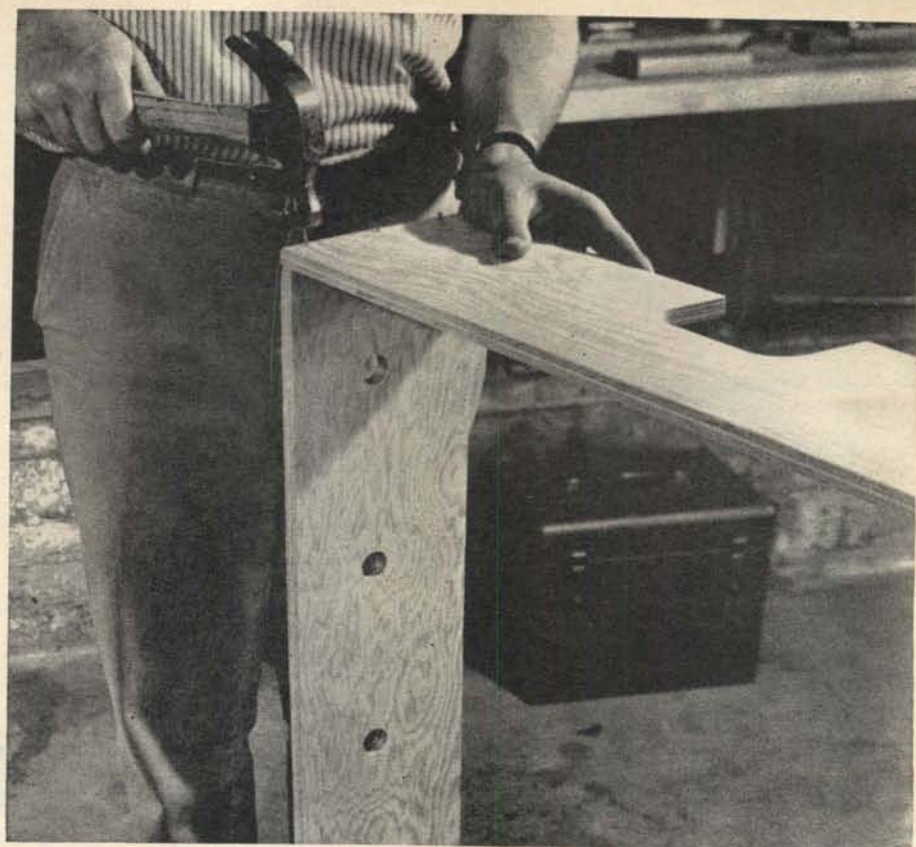
Todd originally thought up the game to amuse his two young sons, but it is equally fascinating to their elders. Some of them may remember playing a similar game sometime or other, but no one has come up with the build-it-yourself idea before. Also, travelers may recall seeing a game resembling it in French

cafes, but the European version was much more complicated and flashy, being built of steel with a glass top. Besides, it was coin-operated, and Todd wasn't going to increase his sons' allowance just so they could play some silly game. So after a series of conferences with his lumber dealer, a lot of trial and error, a few bashed thumbs and a good deal of wasted plywood, he produced his own exclusive model.

The ingredients were: Two sheets of fir plywood, 2' by 4', one $\frac{1}{4}$ " thick, the other $\frac{1}{2}$ "; six $\frac{3}{4}$ " wooden dowels, three feet long; and a few screws, nails, rubber washers, and some glue and paint. The result is a box a little more than 3 feet long, 2 feet wide, 6 inches high, with six parallel rods stretching across through holes in the long sides of the box. Hanging from each rod are three small paddles; their flat surfaces are what make the ball go.

Opposing teams play on opposite sides of the table. By rotating, sliding, and twisting the rods, players bat the ball toward their left, where each team's goal is. The goal is a 4-inch aperture cut in the end of the box with a piece of net tacked around it to catch the ball. Each goal is one point, and the game may be played in four quarters, with teams changing goals at the half; or until a predetermined score is reached.

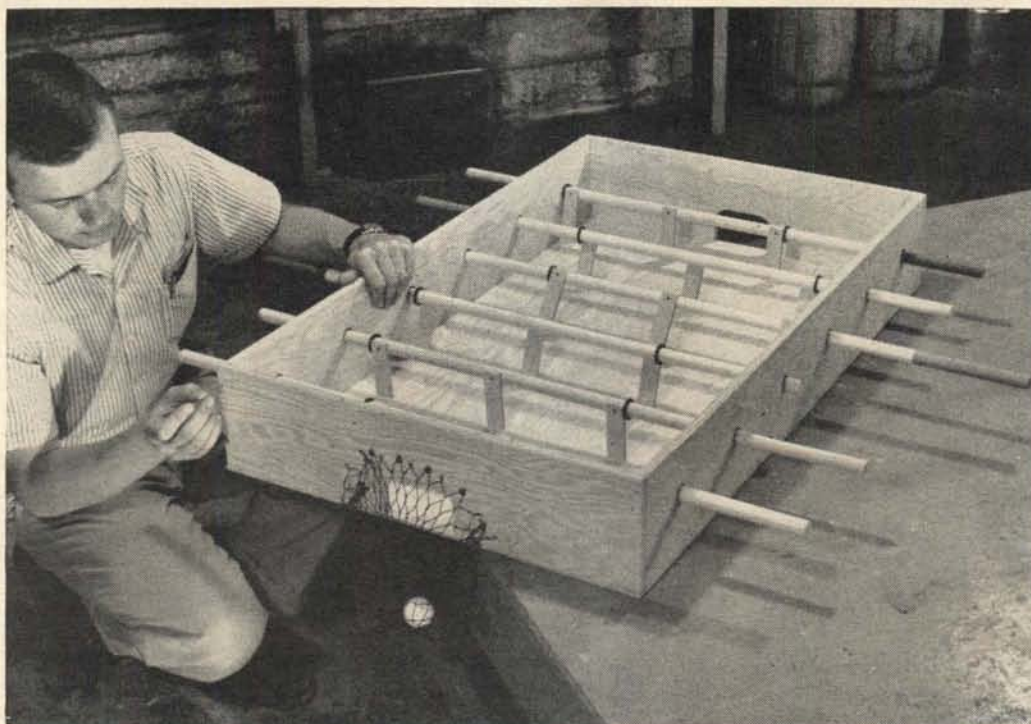
Simple? Yes, but dexterity pays off, too. Todd says that to play the game and win, you need about 75 per cent skill and 25 per cent luck. Just to play the game, all you need



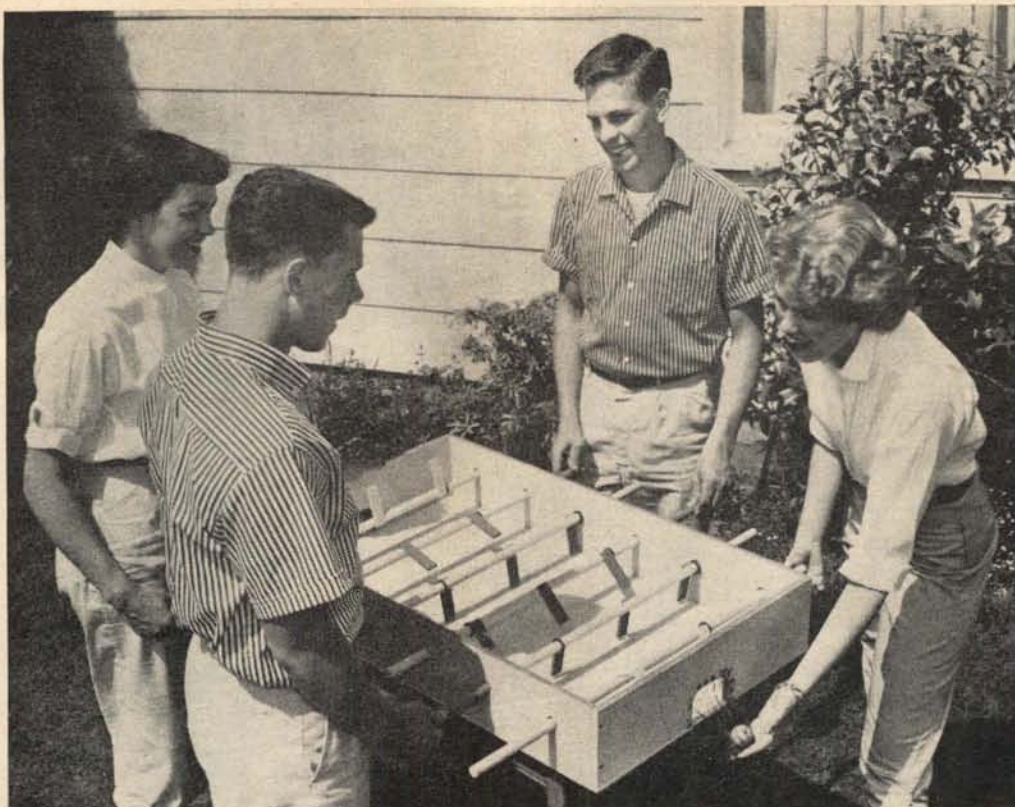
FIRST STEP in assembling your game, after cutting out the pieces, is to put together the sides and ends. Holes, $\frac{7}{8}$ " in diameter, have been drilled in sides. Holes are slightly larger than $\frac{3}{4}$ " dowels to allow easy manipulation during play.

is the luck. Physical condition is not important—anyone strong enough to stand up can play—except for lung-power. Players are their own cheer-

ing section, and the hilarity is not the quiet kind, judging from the uproar that has been coming out of the Todd basement lately.



AFTER DOWELS have been inserted in holes, last side of the box is put in position, held by two locking nails in each end that fit in predrilled holes. A piece of fish net or similar material may be tacked around goal hole to catch the ball.



IT'S A POINT! Throw the ball back in the box and on with the game. You play it the way it looks: Try to sock the ball with the little paddles so it goes into your goal and not the other team's. You'll probably want to make your own rules—and you'll certainly want to make your own game. It's really simple, with a couple of pieces of plywood, a few wooden dowels, and some screws and nails. Paint makes it look professional.

IN JUST a few months, the game has become a minor craze in Chevy Chase. Minor, because till very recently, Todd had the only game. Although it was fairly simple for him to build in his own workshop, he didn't feel quite neighborly enough to build one for each of his fellow-enthusiasts, and it would have been almost as hard to show them how. Fortunately, it occurred to him that the public-spirited thing to do was to get out printed instruction sheets on how to build the game. Then his neighbors could make their own and stop clogging his basement. And who more interested in assisting in such a gesture than the plywood people? Why not ask the Douglas Fir Plywood Association of Tacoma, Washington, for instance, if they wanted to produce the plans. Todd did, and they did.

The whole thing can be put together in a few hours by the most butter-fingered amateur.

Some people claim that playing the game provides beneficial arm and wrist exercise, if you care about that sort of thing. Todd doesn't especially. But he has discovered one asset, unsuspected when he first got interested in it. He can take his game-in-a-box along to church bazaars and P.T.A. fund-raising carnivals, charge the sporting types ten cents or so to have a go at it, and rake up a contribution of \$10 for the worthy cause. This, says Todd, is much easier than baking a cake.

PARTS SCHEDULE

CODE	NO. REQ'D.	SIZE	PART IDENTIFICATION
A	2	6" x 37 $\frac{3}{4}$ "	Sides
B	2	6" x 24"	Ends
C	1	24" x 38 $\frac{3}{4}$ "	Bottom
D	18	1" x 3 $\frac{3}{8}$ "	Paddles
	6 ea.	$\frac{3}{4}$ " Diam.	Hardwood Dowels
		36" Long	

Miscellaneous—1 doz. 1" No. 4 F.H. wood screws
1 $\frac{1}{2}$ doz. $\frac{5}{8}$ " No. 6 F.H. wood screws
6 ea. 6d finish nails
4 ea. 8d common nails
1 doz. hose washers or washers with $\frac{3}{4}$ " holes
glue and finishing materials

STEP-BY-STEP INSTRUCTIONS

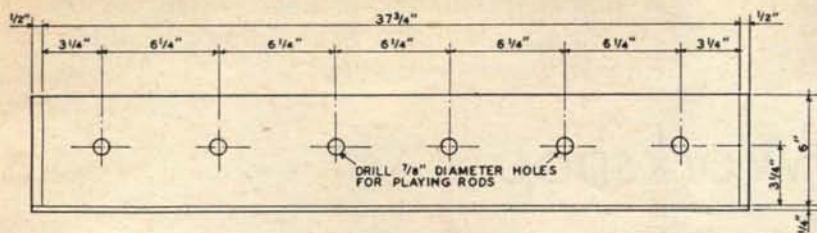
This game can be put together in a few hours with simple hand tools by the most amateur carpenter. The box is built from two Handy Panels (2"x4") of fir plywood. Six $\frac{3}{4}$ " hardwood dowels are used to make the playing rods.

1. Carefully lay out all the parts on the two fir plywood Handy Panels as shown on the cutting diagram and parts schedule.

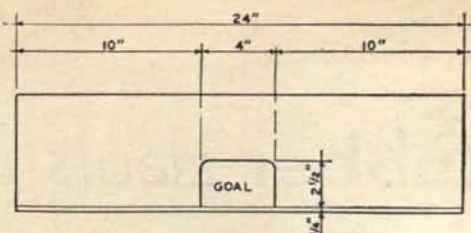
2. Next, cut plywood bottom, sides and ends to size. Drill $\frac{1}{2}$ " holes in upper corners where goals have been marked out and make cutouts with a keyhole saw. Drill six $\frac{5}{8}$ " holes in the sides, spaced as shown and centered $\frac{3}{4}$ " above the bottom edges.

3. The playing rods are made from $\frac{3}{4}$ " diameter hardwood dowels. Select these carefully at your lumber dealer's to insure getting the six straightest rods available. Cut paddles to size from $\frac{1}{4}$ " plywood. Drill and countersink one screw hole on the center line of each paddle $\frac{3}{8}$ " from one end. Mark center lines for paddles as shown along each dowel on the left side as the dowel is held in the right hand. Provide a shoulder for each paddle on all the dowels by making $\frac{3}{8}$ " deep cuts $\frac{1}{2}$ " to each side of center lines. Remove material between cuts with a wood chisel.

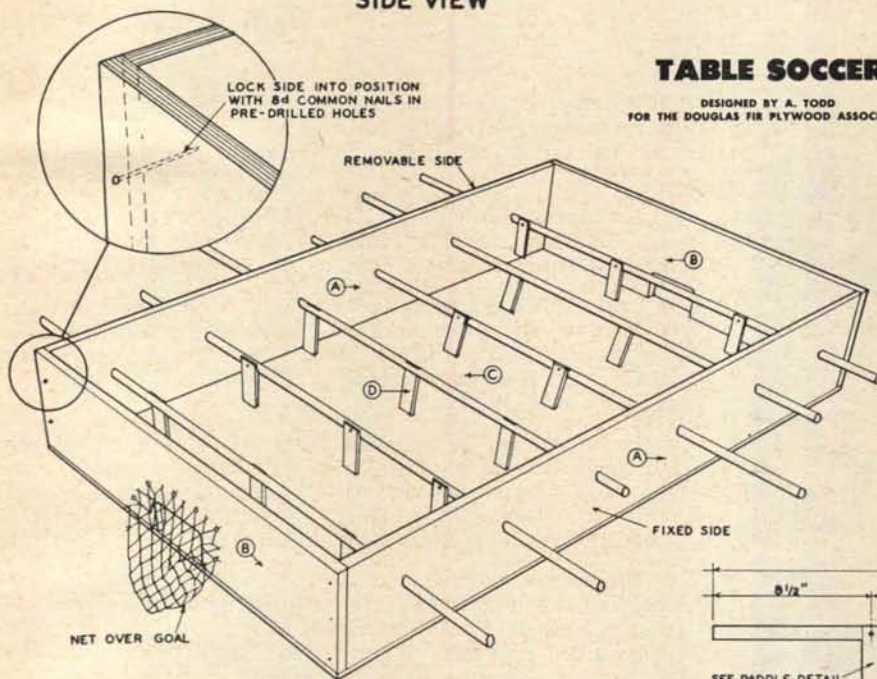
4. Drill screw holes in dowels to prevent splitting. Using



SIDE VIEW



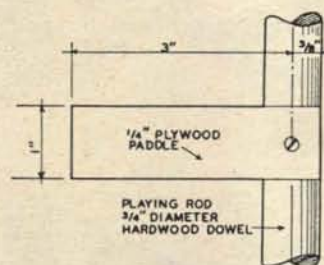
END VIEW



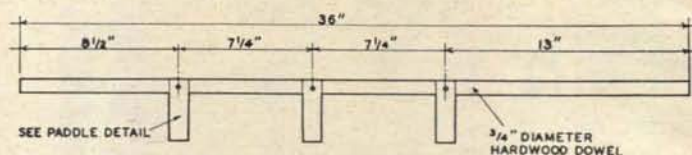
ASSEMBLED UNIT

TABLE SOCCER

DESIGNED BY A. TODD
FOR THE DOUGLAS FIR PLYWOOD ASSOCIATION



PADDLE DETAIL



PLAYING ROD

glue, attach each paddle as shown with one $\frac{5}{8}$ " No. 6 F.H. screw. Hold the paddle firmly as the screw is turned down. Slide a rubber washer over the ends of each rod and push it over to touch the nearest paddle.

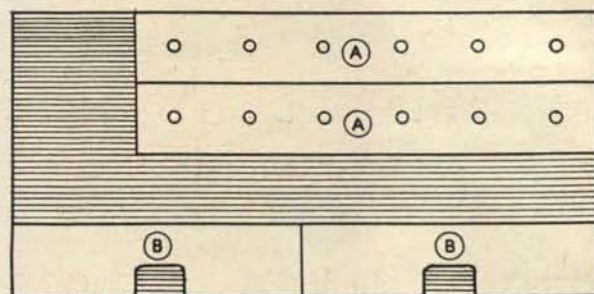
5. On the floor of the playing box drill and countersink screw holes $\frac{1}{4}$ " in from the edges where the ends and the fixed side will be fastened. Assemble with glue and 1" No. 4 F.H. wood screws. Use glue and three 6-penny finish nails at each corner to fasten the ends to the fixed side.

6. Place the removable side in position and drill two holes in each corner for 8-penny common nails, to hold the side firmly when the game is in use.

7. Sand all edges and ease corners with 1-0 paper on a soft block. Painting is unnecessary unless the table tennis ball picks up static electricity from the unfinished wood. This can be overcome by painting the ball or playing box. Use a primer and two coats of semi-gloss enamel. Paint the last 6" of the long end of the rods a distinctive color so players can quickly tell their own rods from their opponent's.

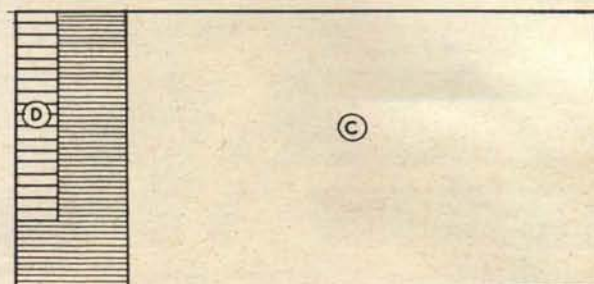
8. Assemble the game by sliding rods through the holes of the fixed side with ends alternating. Lock removable side into position with 8-penny common nails in predrilled holes. Now choose your partners, toss in the ball and start the game.

Cutting Diagrams



$\frac{1}{2}$ " x 2'-0" x 4'-0"

INTERIOR-DFPA-PLYPANEL A-D



$\frac{1}{4}$ " x 2'-0" x 4'-0"

INTERIOR-DFPA-PLYPANEL A-D

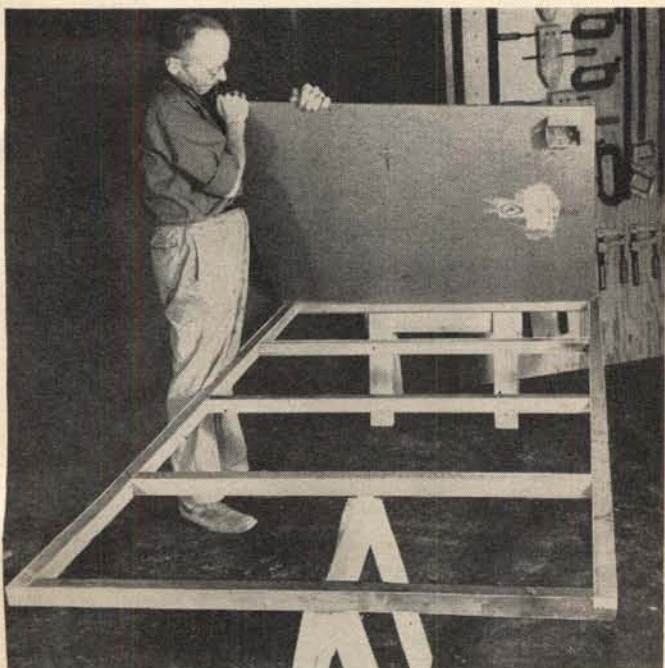
A simple installation of new radiant rubber electric panels keeps Paul Corey's working fingers warm

Rubber Heats my Workshop

PAUL COREY



PHOTOGRAPH 1—Two four-foot-square panels of Uskon bathe the working area of Paul Corey's shop with gentle radiant heat. The result is worthwhile comfort and —because cold fingers are clumsy—safety.



PHOTOGRAPH 2—Supporting the radiant panels is a simple frame of 2x2 lumber, 4 feet wide and 8 feet long. Center strip has hole near one end to permit electrical connections between the two panels. Other strips are for bracing and to fill space between standard-width insulation.

IT'S HARD for the home craftsman to be crafty when his fingers are cold. After proving that fact to myself during a couple of miserable winters, I did something about it.

I added radiant heat to the working area of my shop by building and installing an overhead panel of the newest thing in home-heating devices—radiant rubber.

Called Uskon and made by the United States Rubber Company, the panel material is rubber made resistant by the addition of carbon black. The rigid type of Uskon that I used is supported by lamination to a sheet of asbestos-cement board.

Uskon comes in assorted sizes and voltages. For my purpose, the best thing was the 110-volt type in two panels four feet square. At 22 watts to the square foot, this gave me a total load of 704 watts—easily handled on any ordinary household circuit.

Building a heating panel was simply a matter of supporting the Uskon on a frame hung down from the ceiling where it would be close enough to give me the maximum warmth. Since it was not feasible to heat my whole shop space, I wanted to concentrate the warmth where I'd be working. With radiant heat I can be comfortable without the expense of heating the air



PHOTOGRAPH 3—Uskon panels are placed on the framework and fastened with screws every 8 inches all around. Junction boxes that come as a part of the panels should be placed so they will be close together to simplify wiring—see next picture.

of the room to comfort level and I can get the benefit of the heat within a few minutes after flipping the switch.

The method I used can be adapted easily to providing supplementary heat for a chilly bathroom, guest room or nursery—or for any room in the house, for that

matter.

For permanent installation on a ceiling, Uskon is also made in a flexible variety (called Type T—for thin) that is fastened up by use of adhesive.

The accompanying photographs show the steps I followed in adding rubber heat to my shop.



PHOTOGRAPH 4—Wiring consists of switch (standard surface-mount light switch) and cable connecting two boxes. White wire from source is connected directly to terminals in boxes. Black wire goes through switch first.



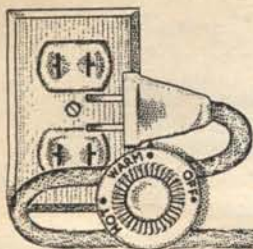
PHOTOGRAPH 5—Rockwool insulation is packed on top of heat panels. This is done to concentrate heat when panels are used in a chilly and uninsulated room. In ordinary installations, ceiling and walls should be insulated in the standard fashion.



PHOTOGRAPH 6—Quick and simple method of hanging the completed panel uses a hook in the ceiling near each corner of the panel. A length of ordinary transom chain is fastened to the panel frame with a screw.



PHOTOGRAPH 7—A coat of one-coat wall paint completes the job. Any kind of paint in any color works all right. On-off switch is adequate control for a panel used this way, although for most home installations a thermostat is worthwhile.



Advice to apply to appliances

Part V: Electric Toasters

J. J. LIGHTER

THE POPULARITY of electric toasters is indicated by the fact that they are near the top of the appliance best seller list. They have come a long way since the earlier nonautomatic days when they produced a smoldering piece of charcoal as often as not. Realizing that this was the fault of the operators and not the toaster, designers set about eliminating the chance for human error as much as possible. This led to a chain of improvements including automatic pop up, automatic current cut off, and such innovations as butter warmers, toast reheating, and provisions for keeping pancakes warm.

The purpose of this section is to aid you in the maintenance of these toasters by familiarizing you with how they work. Realize, please, that no one article can possibly explore all of the individual brands on the market. We shall, however, cover the best-known general types and their working principles. Actually these principles are more closely related than may sometimes be apparent by visual inspection of the mechanism of different types. Construction is not always dictated by what the designer may consider ideal. Producibility, cost, patents, and other factors often prove to be the most important.

Toasters with a two-slice capacity are the most popular home models, although one slice models exist as do commercial models holding a larger number of pieces. These toasters all have some things in com-

mon: heating elements, a rack to hold the slices of bread, and of course a line cord (cordset). The elements are made of special ribbon-like resistance wire such as Nichrome. Nichrome is a trade name for an alloy of nickel and chromium which has become, by popular usage, a term for resistance wire in general. The material that the elements are wound on is an insulating mineral known as mica. You will notice that, like other heat producing appliances, the toaster has a heavy-duty cordset. This is required for safety because of the amount of current needed to produce the proper heat.

Toasters, as they will be discussed herein, can be classified as follows:

1. Nonautomatic. 2. Semiautomatic.
3. Automatic Pop-Up types: a—Clock timer; b—Thermostat Type; c—Combination Type; d—Heat Operated Timer.

NONAUTOMATIC

THE NONAUTOMATIC is of course the simplest of these toasters. As shown in Figure 1 it consists electrically of the cord, heating element, and connecting terminals. In this type the heating element or elements are mounted in the center only. This is because doors must be provided at the sides to permit handling of the slices. In pop-up types both sides can be toasted at once as the bread is put in and removed from the toaster by means of slots in the top.

Due to their low price a number

of these nonautomatic toasters are still sold. Usually the doors are so arranged that opening them and then closing them flips the bread over without the necessity of handling the bread itself. This, however, is about the extent of mechanical assistance one can expect for so small an investment. As a rule the trouble usually experienced with this type of toaster is a burned out element—which can be detected visually. The reason for this is simply that there is very little else that can go wrong—no timers, no switches, no indicators, no thermostats, etc. This type of toaster does not promise to do your thinking for you and consequently the element is subject to the abuse of overheating. Another reason that the element may not last as long as you had hoped is that it must toast both sides of the slice before it can quit, whereas its automatic relative has an element for each side. Anyway, what did you expect for \$2.98?

Something can be done about patching that burned out element. A mending sleeve as shown in Figure 2 is the usual answer. It is merely a small tube of some soft metal with which the broken ends of the resistance wire can be held together. Simply insert the wires in the tube and mash it tightly together with a pair of pliers. This same technique can be applied to other appliances using heating elements. Where possible, such as when actual coils are involved, the wires should be over-

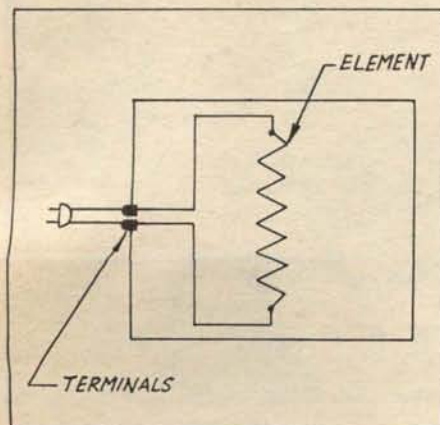


FIGURE 1—Electrical circuit of the nonautomatic toaster.

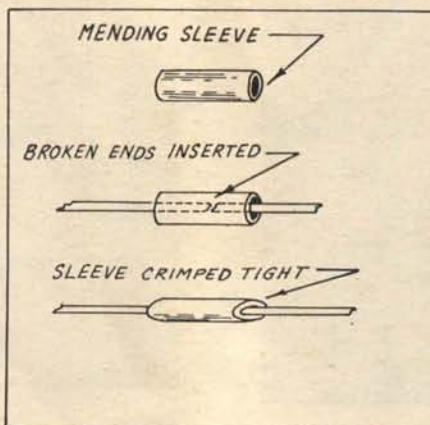


FIGURE 2—Use of a mending sleeve for repairing broken heater elements.

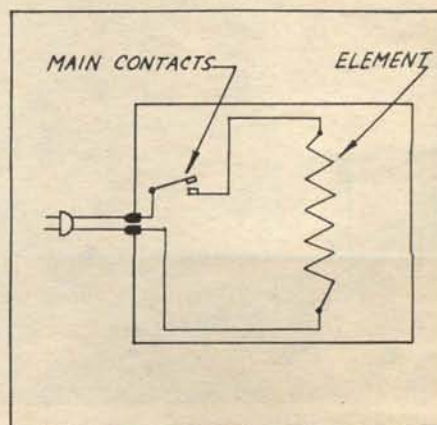


FIGURE 3—The main contacts of the semiautomatic toaster may be operated by either a clock timer or a thermostat.

lapped before clamping on the mending sleeve. This repair will usually amount to only a temporary measure because heating elements that fail from continued use are likely to be weak at other places. In the case of a cheap toaster where the cost and bother of putting in a new heating element is questionable the mending sleeve may help stave off a new cash outlay. In a more expensive model the mending sleeve may suffice while you hunt down a new element.

Because the nonautomatic toaster is not likely to have a switch, the advice given in Part I of this series bears repeating (see May-June 1957, issue). A line cord switch is a handy and beneficial thing to have on appliances especially heat producing appliances which use a large amount of current. This not only saves time, wear and tear on the cord and plug but also prevents burning of the appliance terminals caused by unplugging when the current is on.

SEMI-AUTOMATIC

THE SEMI-AUTOMATIC toaster is an improvement upon the nonautomatic but since its actions do not include the pop-up feature it is one category below that type. Semiautomatic toasters will commonly have a simple clock type mechanism or thermostat, which when engaged starts the toasting process and at the completion of the timing cycle shuts off the current. The end of the cycle may be accompanied by an audible or visual signal. An indicator light, for example, may go off when the element circuit is broken. In one type of toaster when the current cuts off at the end of the cycle a small electromagnet is de-energized, releasing a steel ball which strikes a bell thus heralding the event. Usually the regulating mechanism in the semiautomatic toaster is adjustable to allow the desired degree of brownness to be selected.

Again, since this type does not represent the epitome of toasters there are certain defects. The absence of the pop-up feature necessitates the

turning of the toast. Also this simple mechanism usually fails to compensate, that is, insure that the slice toasted from a cold start is of the same brownness as the slice toasted after the toaster has warmed up.

Thermostats, to refresh your memory, were explained in Part Two of this series (July-August, 1957). Since we have already mentioned thermostats in this article and will refer to them again shortly the following information is furnished. The simple bimetallic thermostat consists mainly of a strip formed of two metals which expand at different rates. When heated, the fastest expanding metal will overcome the slower expanding metal and cause a "bowing" action to take place. If a thermostat is made part of an electrical circuit, then, that circuit can either be completed or interrupted depending upon the action of the thermostat in response to temperature.

The switch indicated in Figure 3 could be actuated by either a clock mechanism or a thermostat according to the individual semiautomatic toaster. This timing mechanism as well as the parts it has in common with the nonautomatic toaster are points to watch for service in the semiautomatic toaster.

AUTOMATIC POP-UP TYPES

THE MERE fact that a toaster is of the pop-up type brings it under the heading of automatic. Although the popping up of the toasted bread in the rack is the end result—it is the means that we are more interested in. Several basic systems along with their variations are used to accomplish this and are discussed below.

Clock Timers. The electrical circuit of the clock timer toaster (Figure 4) appears to be similar to the one for the semiautomatic—and indeed it is except for the additional elements. The difference in these two is the addition of the pop-up feature. Depressing the operating lever energizes the clock spring, lowers and latches the bread rack, and closes the electrical circuit. At the end of the

toasting cycle the clock mechanism opens the electrical circuit and releases the bread rack allowing it to pop up.

To be useful, clockwork mechanisms depend upon the gradual release of energy stored in the wound spring. In the pocket watch, for example this system is necessarily rather elaborate. In the toaster a much simpler system is used, although it may seem to take an almost endless number of forms. We shall describe here several basic ways in which this spring energy is put to useful purposes in the electric toaster. It is unlikely that you will see any of these mechanisms duplicated exactly in a given toaster but their theory of operation is used time and again. Two actions are needed, the raising of the bread rack and the opening of the electrical circuit. One action can usually be made to depend on the other so that both will take place at once. One part of a set of electrical contacts, for example, could be fastened to the rack mechanism so that when it rises the electrical circuit will be broken as shown in Figure 5.

Spring energy is easily controlled by the use of an escapement mechanism as shown in Figure 6. The escapement is so called because it allows a tooth to escape from the pallet at regular intervals. If you will imagine that the pallet, which is pivoted, is caused to rock back and forth you can see how only one tooth of the spring driven ratchet wheel is allowed to pass at a time. By controlling the rate at which the pallet rocks back and forth the speed of the wheel can be controlled and hence the time required to dissipate the energy of the spring can be controlled. This is merely a means of regulating the spring energy so that it is useful. This controlled energy will then have to be coupled with other devices to achieve the required mechanical actions. Some of these are discussed below.

Figure 7 shows how a cam could be used to control the opening and

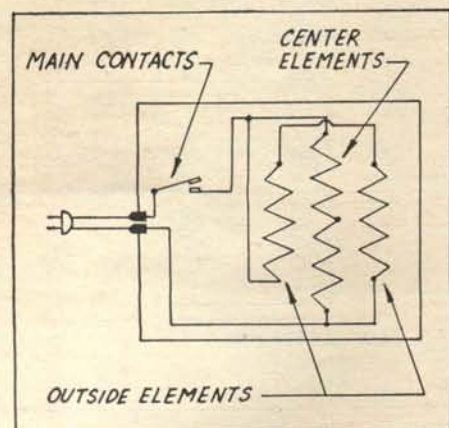


FIGURE 4—Typical electrical circuit of the clock timer type of automatic toaster. Note that outside elements are in series with each other but in parallel with the center elements.

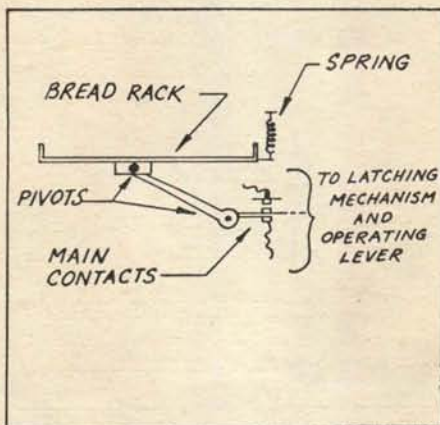


FIGURE 5—This illustrates the principle of using the action of the rising bread rack to break the electrical circuit.

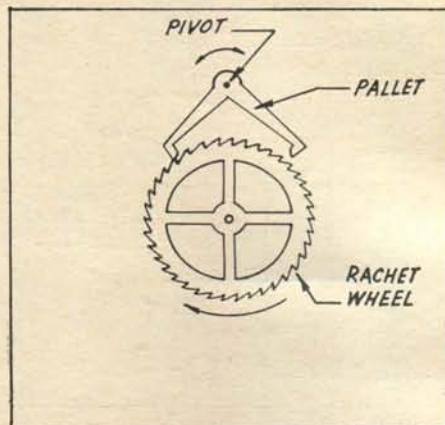


FIGURE 6—One type of escapement mechanism used to control the release of energy stored in a spring.

closing of electrical contact points. Pressing down on the operating lever would wind the spring in the clock mechanism and also position the cam so as to close the electrical circuit. The normally open contacts would remain closed as long as they were forced to do so by the cam lobe. At the end of the timing cycle the cam lobe would free the contacts, thus opening the electrical circuit.

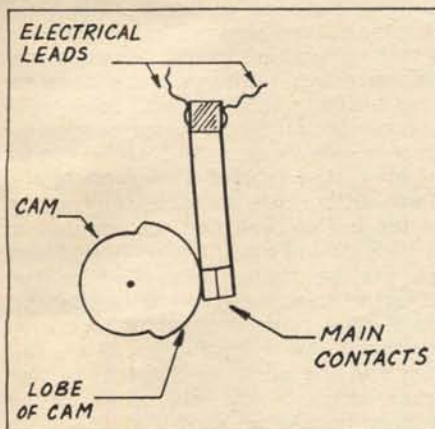


FIGURE 7—The use of a cam in operating a set of electrical contacts.

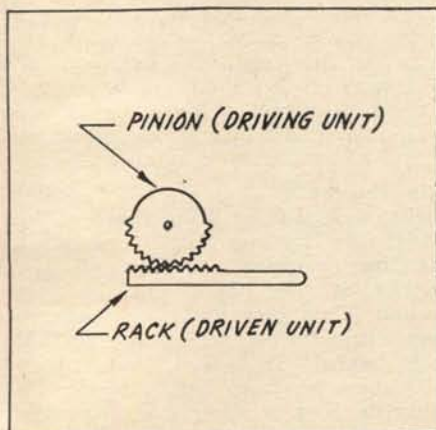


FIGURE 8—The use of a rack and pinion to convert rotary motion to straight line motion.

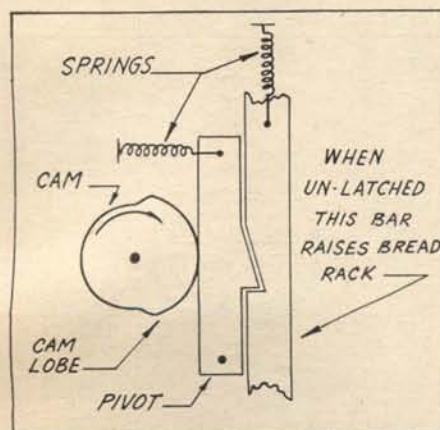


FIGURE 9—Cam operated latch.

Figure 8 illustrates a rack and pinion. Pressing down on the toaster operating lever positions the pinion and rack for the beginning of the cycle. Controlled spring energy causes the pinion to move the rack at a predetermined rate. Rotary motion is here being transformed into linear (straight line) motion. Conceivably the movement of the rack could be utilized to do any number of things such as operate electrical contacts, release the bread rack, etc.

Figure 9 shows a cam operated latch mechanism. This mechanism is popularly used in conjunction with the pop-up feature. The cycle is started by depressing the operating lever of the toaster. This winds the spring, positions the cam, and latches the bread rack in the down position. The electrical circuit is also closed by this action but at this moment we are concerned primarily with the mechanical aspect. The clock operated cam will cause the latch to remain engaged by virtue of the position of the lobe. At the end of the cycle the lobe will have passed and spring pressure is free to disengage the latch and cause the bread rack to pop up.

In this type of toaster all that is needed to give you some control over the degree of brownness that you desire is a method to control the speed of the clock mechanism—or the time it is allowed to run. On some models rubbing action slows up the process when more brownness is selected on the dial. On others the length of time that the clock runs is controlled by the amount of winding applied. By positioning a stop at any one of several points the length of winding stroke is controlled and hence the running time.

A heat compensator has been added on some models of this type which attempts to make up for the fact that the first batch of toast would not ordinarily be as brown as the rest. It is simply a bimetallic strip which causes more friction on the

mechanism—thereby slowing it up and prolonging the cycle—when cold than when hot.

Thermostat Type. A true thermostat timer would seem to need very few parts to operate. To insure the ultimate in performance which is needed to survive in this highly competitive industry other refinements are added. Keep in mind that, as was previously mentioned, the final product often is the result of some expediency rather than the designer's desire. The reason this is mentioned again is because you cannot help believing, as you gaze at the inner workings of some of these toasters, that there must have been an easier or more practical way of doing the job.

Figure 10 depicts the workings of a mythical thermostat type toaster. The thermostat may not always be designed to accomplish all of the necessary actions itself. In one popular type on the market the thermostat merely opens the electrical circuit at the end of the cycle. On this same toaster the heating of a special wire causes it to expand and position itself for its role. When the thermostat cuts off the current the wire cools and upon contracting releases the latch holding the bread retaining rack down. The thermostat itself, being temperature sensitive, can compensate for changes and produce a consistently toasted product—or sometimes an auxiliary thermostat is used for purpose of compensation.

Combination Type. A combination of clock timer and a thermostat is one approach to producing a slice of toast with the same degree of brownness regardless of whether the process was started with the toaster hot or cold. The length of the cycle, of course, is controlled by the thermostat, which is in a position to react according to the actual heat being applied to the bread. The clock goes through its regular cycle uninterrupted by the thermostat. Complete

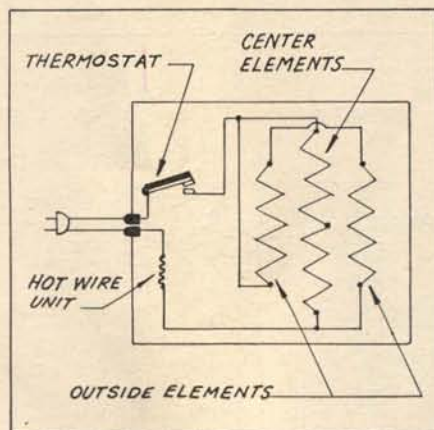


FIGURE 10—Thermostat controlled automatic toaster. In the one shown here the thermostat controls the cycle but the hot wire unit is responsible for the action which releases the bread rack upward.

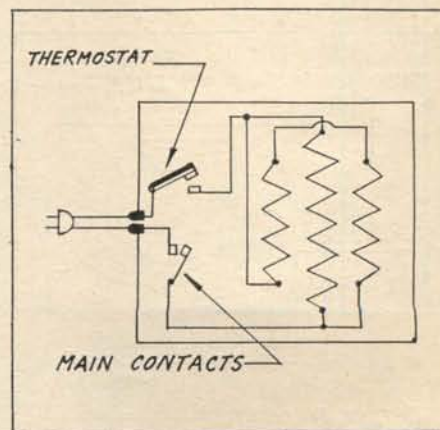


FIGURE 11—Combination type automatic toaster. Clockwork controls the cycle and the main contacts but the temperature is regulated by the thermostat.

compensation is made by the thermostat in that if more heat is needed it closes and energizes the elements; if less is needed it opens and stops the flow of current. The clock, then, is responsible for the basic amount of time required while the thermostat sees to it that the temperature is kept within reasonable limits during that time. Figure 11 illustrates an electrical circuit for this operation.

Heat Operated Timer. This type of timer is often called **Stove Type Timer** because it utilizes a special heating coil or "stove" as part of its operating mechanism. It is hard to visualize the functioning of this device just by looking at it—unless it is actually plugged in and in operation. Great care must be taken in operating a partially disassembled toaster—this facet will be touched on later, however. The purpose of Figure 12 is to simplify the stove type timer and its operation.

When the starting lever is depressed the bread rack is lowered and latched and the main contacts are closed. Current flows through the main heating elements and also through the "stove" element which is in series with the main elements. As the stove heats the free end of the bimetallic strip (which is **not** a part of the electrical circuit) swings farther and farther from its position when cold and in the process positions the bread rack release lever for action later. It is limited in its swing by the "lighter-darker" adjustment according to wherever that control is set. Although the free end of the bimetal has been stopped from moving, the "stove" element continues to heat the bimetal but it can swing no farther so it must distort. This distortion causes a tripping action which closes an auxiliary set of points that short the "stove" element out of the circuit. With the "stove" out of the circuit the bimetal cools and begins to return to its original position. In doing so it

trips the previously poised bread rack releaser lever. This allows the bread rack to rise and opens the main contacts thereby shutting off the current.

The whole cycle is made ready again by pulling down on the operating lever. The bimetallic strip, being temperature sensitive, will compensate for heat already stored in the toaster from previous use, thereby permitting uniform results. There are variations of this method in use but this describes the action as it actually takes place in one very popular toaster.

SERVICING HINTS

TO BE useful to you the information presented in this series must allow you to work on the appliance you actually have an interest in. That is why the information is kept general and no attempt is made to single out one or two brands of any appliance for special consideration. As a matter of fact, detailed drawings and photographs of toasters, for example, are of little help to the home mechanic because of their complexity. Much better technique is developed by learning general theories and principles of operation. Then by careful inspection and analysis of your own appliances you can solve their mysteries for yourself.

If you are interested in developing your ability with appliances it is not at all necessary to wait until trouble occurs to try to figure them out. The use of the testing devices described in Part IV of this series (November-December, 1957) will prove very helpful in investigating and troubleshooting the circuits mentioned herein. It is usually best to figure out the electrical circuit first and make a sketch of it to give direction to what you are doing. When visual efforts do not seem to yield the current path, give the electrical sleuthing aids a chance.

Operating an electrical device without its protective coverings is always

dangerous and in the case of the toaster the hazard of burns is added to that of shock. In addition to personal injury damage to the appliance may result. The rule is to proceed with caution and only after double checking to make sure no ill effects can take place.

In observing a toaster mechanism in operation it must be partially disassembled. This of course exposes the heating elements. The problem is made no easier by the fact that the toaster may have to be placed on its side to see it operate. Obviously it must be rested on a non-conductor; furthermore, a nonconductor that will not burn. A china plate or similar ceramic surface will usually do the trick. Caution must still be taken that this unnatural position does not affect any of the working parts in their functions, that necessary insulators do not drop out or other removable pieces do not get out of place. If you have any doubt of your ability to do the above safely, then by no means attempt it! Sacrifice a little knowledge if necessary as we strictly believe in Safety First!

If the toaster fails to heat up it is obvious that an open circuit exists in either the appliance or its line cord—providing of course that there is power at the outlet. The outlet can easily be checked with a tester designed to indicate the presence of 110 volts or by simply plugging in an electrical device known to be operative. Figure 13 shows the use of a continuity tester on a toaster circuit. Here is an instance where a wiring diagram should be drawn first. Beware of units in parallel; one unit "open" will not show up that way as the test current still has paths through the good units. If a series unit is burned out all current flow would be blocked. One faulty parallel element can easily be detected when the toaster is plugged in, however, as it would be the only

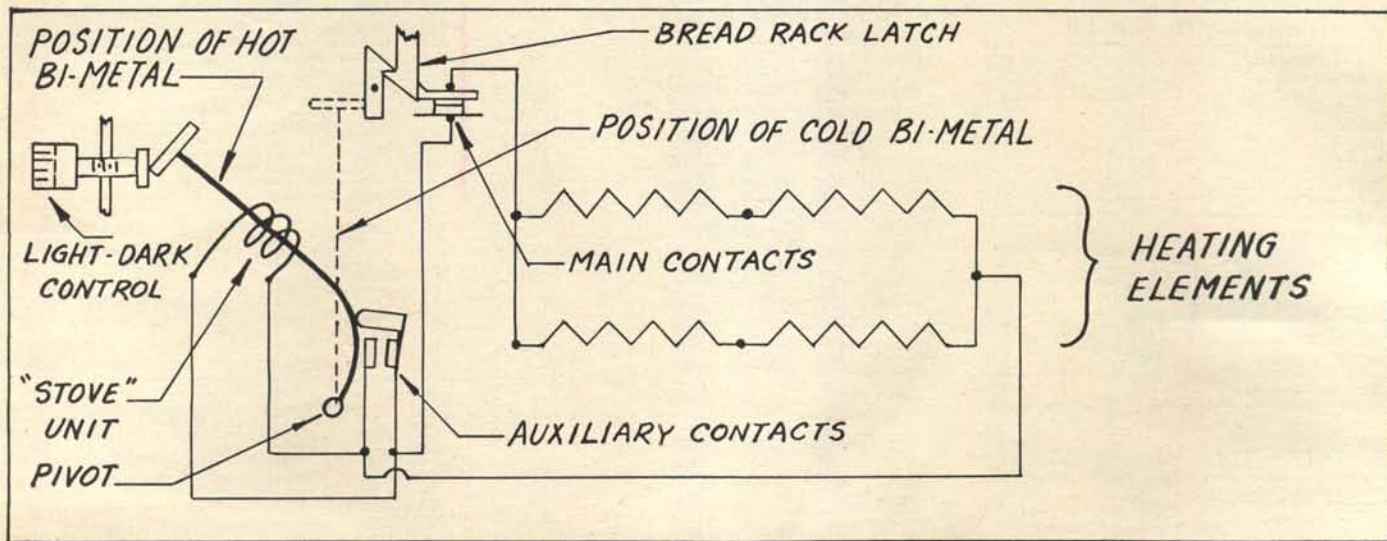


FIGURE 12—The heat operated or stove type timer. While this drawing shows in substance what occurs it is not possible to make a flat drawing fully explain details that require three dimensions.

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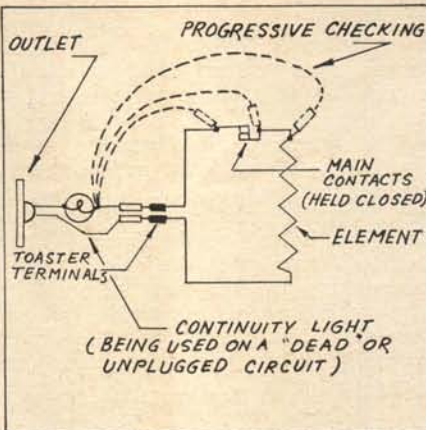


FIGURE 13—Use of a continuity light in checking a toaster circuit.

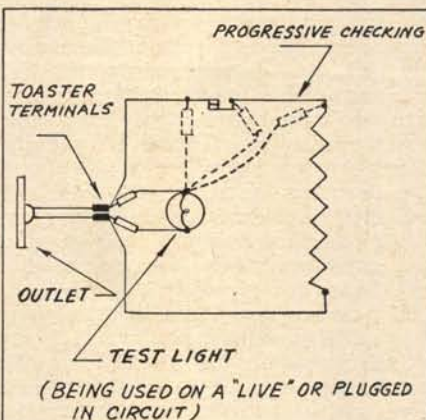


FIGURE 14—Use of a test light on a "live" circuit to isolate an electrical trouble.

one not operating. Notice in Figure 13 how one test prod remains fixed while the other one is successively moved along the electrical path. A break of course will be indicated as being between one point where the light lights and the next point where it does not. Nothing about this is very difficult but it is sometimes hard to remember all of these things at once. Another point for caution; don't be misled by switches or contacts that would be normally closed if in proper operation. Take a pencil or other nonconductor and hold them closed if necessary for checking. Incidentally, respect for electricity is a fine thing. You can receive a shock from this continuity light you know!

Another, but more dangerous, method of checking this circuit would be to plug it in and use the test light as in Figure 14. An "open" would be indicated in the section between where the light last lit and where it ceased to light.

A direct short in the toaster circuit would be followed by a blown fuse. Inspection of the toaster would probably indicate the location of the short because of burning which had taken place there. A ground under some circumstances could cause a fuse to blow or might result in a

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shock to the operator. Because of the modern high standards in the industry, an "open" after prolonged use of the toaster is more likely to occur than shorts or grounds which usually would be indicative of poor workmanship on the part of the manufacturer.

AS ALWAYS use great caution in disassembling toasters. In order to achieve the gracefulness and beauty demanded by today's customers great trouble is frequently gone to to conceal unsightly nuts, bolts, fasteners, etc. No great amount of force should be needed to take apart any toaster. Try to keep in mind several ways that the toaster could have been assembled and after removing all visible means experiment gently with the unseen fastenings.

On toasters with an external adjustment for brownness corrective action is sometimes needed—that is the color you desire is not within the externally adjustable range. By cautious internal adjustment of this control the range can be changed. Caution is urged because usually very little adjustment is needed to achieve much different results.

Occasionally no amount of adjustment to the various parts seems to cure an erratic toasting cycle on a thermostat type toaster. This usually is a good sign that the thermostat needs to be replaced as it has reached the end of its useful life.

When a toaster fails to pop up the toast it usually is caused by binding or excess friction in some of the mechanical parts. Sometimes, however, the contact points may weld together sufficiently to prevent operation.

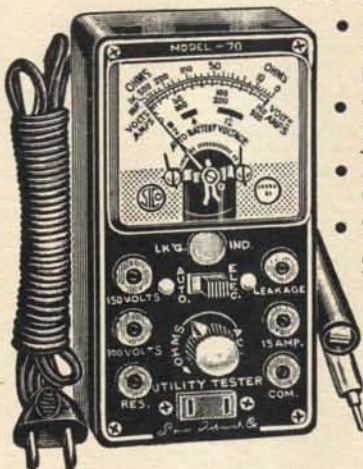
If element replacement is called for, be sure to get exact replacements. The finely balanced circuits of today's toasters require that they be kept that way for proper operation. Contact points, incidentally, may usually be dressed with a fine file or abrasive. Appliance servicemen are sometimes directed to replace contacts rather than dress them. The reason for this is that they may be plated with a special metal that resists burning and arcing. Because it is costly it is not likely to be very thick and would be easily removed by any abrasion whatsoever. This then would result in totally unsatisfactory operation and maybe even damage to the appliance.

Excessive tampering with the thermostat, stove assemblies, clock mechanism, etc., is to be avoided. If your best logical reasoning and intelligent approach does not yield the answer then leave it alone! Trespassing beyond this point in all home repairing is where you stand to lose because hit-or-miss methods usually produce poor results. Besides, you can do almost everything else can't you—why let one small matter get you in bad with the little woman?

NEXT: PART VI: BULBS, LAMPS, AND FIXTURES.

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15⁸⁵

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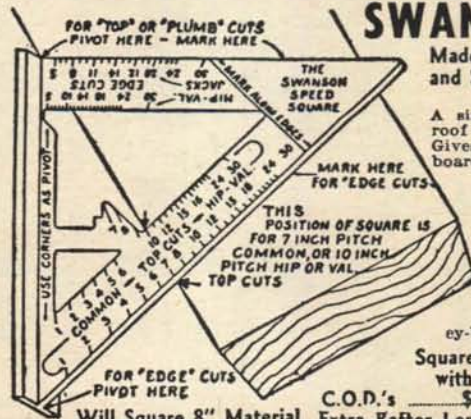
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Here are some things you can do yourself and some you can have done to assure efficient furnace operation.

Getting More Heat from Less Fuel

TED MORGAN

ONCE WE turn our furnaces on in the fall most of us pay no more attention to the way they function. Unless, of course, they stop functioning completely. Then we put in a hurry up call for the serviceman and huddle around the kitchen stove, the fireplace if we're fortunate enough to have one, or some improvised heating unit.

Consistent attention to your heating plant, however, will not only help prevent a complete and sudden breakdown, it will also save you money by cutting fuel consumption and also add to your comfort. While the following suggestions were based on research and other tests by specialists connected with the technical service department of the Socony Mobil laboratories in Brooklyn and apply primarily to houses heated by oil burners, much of the data is applicable to houses heated by other fuels besides oil.

Most of us keep fairly good track of the gasoline mileage we get from our motor cars. But we usually ignore our basement oil burner. But the average oil burner is likely to consume twice as much fuel in a year as does the average motor car. Fuel oil is, to be sure, less expensive than gasoline, but a considerable

monetary saving can be chalked up by using fuel oil as efficiently as possible.

The boxed material accompanying this article consists of tips which should enable you to get more value for your fuel oil (or other fuel) dollar. In the left column are things to do that will probably require some expert assistance. In the right column are things that you can probably do yourself and will involve little if any expenditure of money.

IN THE self-help department you should understand first of all that you have to think in terms of your whole heating plant—from cellar to attic, from tank to chimney.

Start with the tank. Keep it filled during the off season. Humid air entering the vent pipe can condense in a partly filled tank. This forms rust scales that settle in the tank and may cause faulty burner operation. Dirt will get in through the fill pipe, too, if the cap is missing or loose.

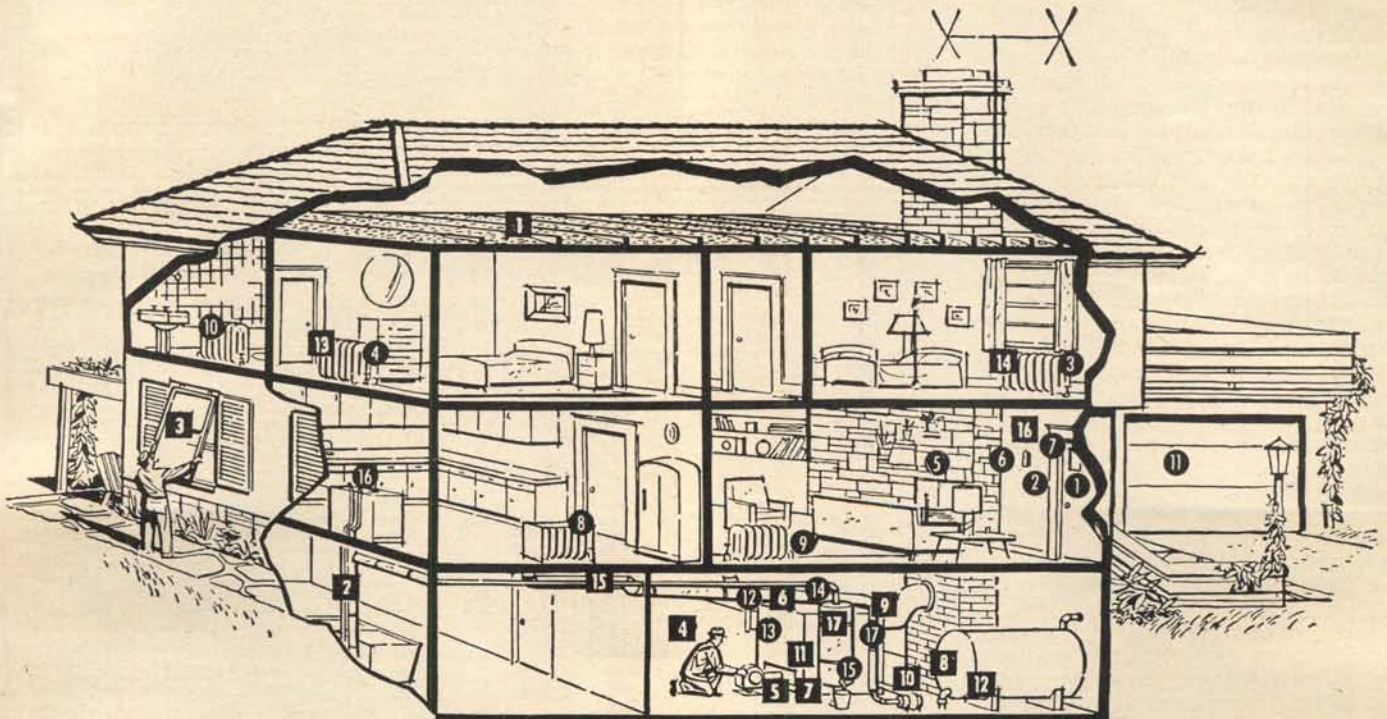
Take a look at the burner itself. Make sure that it is getting enough air. That may mean leaving a cellar window open slightly. You'll depend mostly on your serviceman to adjust the burner for top efficiency.

But you can help, too. If, for example, your burner smokes, roars, or gives off odors, you'll be sure to notice it. Call your serviceman and tell him what it's doing. He may find an air regulator out of adjustment (that roar is caused by too much air), a worn out nozzle, cracks or holes in the furnace.

Inspect your boiler, too. Is it coated with soot? If it is, you're wasting fuel. You can remove some of it yourself, but the best time to have it removed is in the summer when you should have your serviceman check your furnace. At the same time he can clean and adjust your burner.

ANOTHER THING to check on is whether your heating system—steam or hot water—is distributing heat evenly through the house. Check the main pipe. If it runs through an unheated part of the cellar or under a porch, it should be insulated. If you have a warm air system you can do much to give your house even heating by adjusting the duct dampers.

Heat is continually flowing out of your house—through windows, walls, ceilings, door, the roof. Heat loss through a square foot of window glass far exceeds that through a square foot of wall. You can't pre-



NUMERALS ON THIS DIAGRAM of a house correspond to numbers of fuel saving tips in box on opposite page.

vent this loss of heat, but by proper insulation you can reduce it. Insulating the attic floor of a house 25 by 30 feet can save up to 200 gallons of fuel oil a year in a cold climate, or about \$25 at present prices. At that rate it won't take long to pay for the insulation. Storm doors and windows will also, of course, cut

heat loss. And naturally you shouldn't leave doors or windows open too long. It takes a lot of fuel to reheat chilled walls, ceilings and floors.

Check the fit of window and door frames. If they fit loosely, then the infiltration of cold air will cause a lot of heat loss. So you may want to have a carpenter install weather

stripping.

Your chimney also affects heating efficiency. It should extend at least two feet above the highest point of the house. Short, sharp bends in the chimney or in pipes leading to the chimney can cause draft trouble. So can dislodged bricks, birds' nests and leaks. If you suspect there is some obstruction in your chimney take a periscopic look by placing a mirror in the lower opening of the chimney after removing the smoke pipe. Or if there are bends in the chimney, lower a weight on a cord. The weight will locate any obstruction.

THESE CHANGES COST YOU SOME MONEY BUT PAY DIVIDENDS IN FUEL SAVINGS

1. Insulate your attic floor, or, if that is not possible, your roof. Attic floor insulation may save up to 20 per cent of your fuel.
2. See that hot water or steam pipes or warm air ducts are well insulated if they are located near outside walls.
3. Install storm windows, storm doors, and weather stripping. Put caulking compound in cracks. This can save 10 to 20 per cent.
4. Arrange for your heating oil dealer to send an expert to clean, adjust, and repair your heating plant at least once a year.
5. Have this expert check size and angle of nozzle in your burner, clean filters, and check blower, controls, ignition, etc.
6. Also have him make stack temperature and carbon dioxide tests on your furnace to determine its combustion efficiency.
7. Stop air leaks around furnace with asbestos cement.
8. Stop all oil leaks, no matter how small.
9. Have furnace draft control checked to keep too much heat from escaping up chimney.
10. The heating capacity of some gravity hot-water systems can be increased by installing a pump; that of some gravity warm-air plants can be increased by installing a blower. Consult your oil dealer.
11. Baffles in the fire box also give you more heat from less fuel.
12. Insure clean, better-burning fuel by the use—and annual cleaning—of oil filters.
13. Be sure your radiators and heating plant are of proper size.
14. See that your radiators or heating ducts are in balance. Avoid too much heat here, too little there.
15. Check the pitch of all steam pipes. Pipes of incorrect slope may block heat.
16. Be sure your thermostat is located so rooms are evenly heated.
17. Insulate domestic hot water tank.

MAKE THESE BIG SAVINGS YOURSELF WITHOUT SPENDING A CENT

1. Close house doors promptly to keep all the heat inside.
2. Keep temperature moderate enough so windows won't have to be opened.
3. Turn off heat in rooms being ventilated.
4. Turn off heat and close doors of rooms not in use.
5. Close fireplace dampers when not in use. If dampers are missing and fireplace is not used, close chimney opening.
6. Lower thermostat at night. Setting it back 10 degrees for eight hours will save 10 per cent or more.
7. Lower thermostat to 55 degrees when going away for a day or longer.
8. Check radiator enclosures to be sure they are not trapping heat.
9. Remove rugs and furniture from places where they block radiators or registers.
10. Check steam radiator valves for proper function. Replace non-adjustable steam radiator valves with valves of adjustable type. Drain air or water, if present, from steam radiators to allow them to heat up fully.
11. If your garage is heated, keep doors closed and temperature low.
12. Keep water in heating boiler clean for faster, more efficient operation.
13. Watch steam-boiler water level. A boiler usually operates best if level is at center of gauge.
14. Avoid overheating furnace. It wastes fuel.
15. Drain a pail of water to take sediment from bottom of domestic hot water tank monthly to insure efficiency.
16. Check and repair leaky hot water faucets. (A leak of only one drop per second means a loss of 700 gallons a year.)
17. Clean soot out of boiler. A mere $\frac{1}{8}$ -inch soot deposit increases oil consumption as much as 10 per cent.

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Screw Categories

M. ROBERT BEASLEY

HAVE YOU ever gone into a hardware store to buy screws for some household project and discovered that you don't know exactly how to express your needs to the clerk? Or worse still, that you don't understand what the clerk is talking about when he begins rattling off a series of figures that classify his stock of screws.

To eliminate possible embarrassment and to assure yourself that you will get the exact type screw that you require for your job, you should know how to specify and correctly order the material.

To properly classify a screw, you need five different component parts: (1) length; (2) gauge number; (3) type of head—flat, oval or round; (4) Material—brass, steel, etc.; (5) finish—blued, chromium, nickel, cadmium, etc.

For example, you should give your order to the hardware dealer something like this: 1 1/4 inch No. 8 flat headed, steel cadmium plated wood screw. The appended chart will give you the proper gauge to use when placing your order. The length, type head, finish, etc., will, of course, depend upon the job you intend the screw to perform.

In deciding which type and gauge screw to use, always take into consideration that the entire threaded section of the screw should enter the piece upon which you are working. Allow sufficient gauge so that the screw is thick enough to resist shearing under pressure, but also consider the fact that, when working on thin stock, a screw of too thick gauge will have a tendency to split the wood.

The length of a screw is measured from the tip of the point to the underside of the head.

TO OBTAIN maximum efficiency and appearance with your work, it is best, regardless of the type screw being used, first to drill a small pilot hole, a little shorter than the length of the screw. Secondly, another hole should be tapped the length and diameter of the shank of the screw. Then, if you are using flathead screws, the third hole, or countersink, should be tapped to accommodate the head.

Wood screw gauges are shown in diameter to the nearest 64th of an inch:

GA.	DIA.	GA.	DIA.
0	1/16"—	9	11/64"+
1	5/64"—	10	3/16"+
2	5/64"+	11	13/64"—
3	3/32"+	12	7/32"—
4	7/64"+	14	15/64"+
5	1/8"—	16	17/64"+
6	9/64"—	18	19/64"—
7	5/32"—	20	21/64"—
8	5/32"+	24	3/8"

In setting screws, especially into hardwood, your job will be greatly simplified if you will run the thread and shank over a piece of ordinary soap or paraffin. This will lubricate the screw and reduce friction, making your job much easier, but still giving you a secure connection.

STATEMENT REQUIRED BY THE ACT OF AUGUST, 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF WORKBENCH Magazine published bi-monthly at Kansas City, Mo., for January-February, 1958.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, John E. Tillotson II, 543 Westport Rd., Kansas City 11, Mo. Editor, Theodore M. O'Leary, 543 Westport Rd., Kansas City 11, Mo. Managing editor, none. Business manager, none.

2. The owner is: Modern Handcraft, Inc., 543 Westport Rd., Kansas City 11, Mo.; John E. Tillotson, II, 543 Westport Rd., Kansas City 11, Mo.; John E. Tillotson, 543 Westport Rd., Kansas City 11, Mo.; C. S. Tillotson, 543 Westport Rd., Kansas City 11, Mo.; Theodore M. O'Leary, 543 Westport Rd., Kansas City 11, Mo.; Mary Ida Sullivan, 543 Westport Rd., Kansas City 11, Mo.; Wilburn L. Mead, 543 Westport Rd., Kansas City 11, Mo.; C. R. Tillotson, 543 Westport Rd., Kansas City 11, Mo.; Lee Gingery, 543 Westport Rd., Kansas City 11, Mo.; Sarah Peery, 543 Westport Rd., Kansas City 11, Mo.; Joe Scheppers, 543 Westport Rd., Kansas City 11, Mo.; T. F. Stroud, 543 Westport Rd., Kansas City 11, Mo.; James Locke, 543 Westport Rd., Kansas City 11, Mo.

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John E. Tillotson II

Sworn to and subscribed before me this 24th day of September, 1957 — Thomas F. Stroud, Notary Public, Jackson County, Missouri. (My commission expires August 2nd, 1960.)



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Convert an old Nail Keg into a Charcoal Hod

R. M. WOODBURY

A NAIL keg, a length of an old broomstick and a few minutes time are all you need to make a novel hod in which to carry or store a picnic's supply of charcoal briquets. To make this bucket-shaped briquet hod follow these simple steps:

1. Obtain an empty nail keg and pound in any protruding nails, secure any loose staves and sand smooth any rough spots.

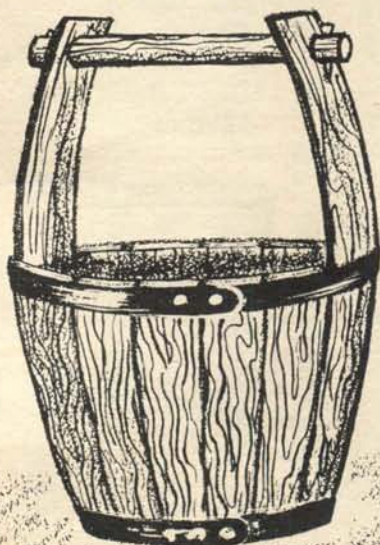
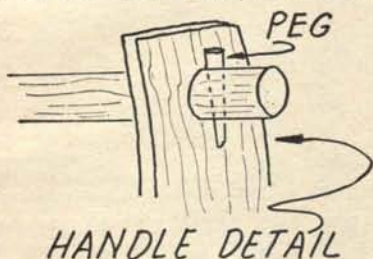
2. Locate two staves directly opposite on the keg from each other and mark with chalk. These are to be left intact to serve as the handle arms. Next, saw the keg in half, making sure to leave the arms.

3. Bore a 3/4-inch hole through the top of each arm, approximately two inches down from the top. These holes are to receive the broomstick handle.

4. Trim the broomstick to the proper length, about two inches longer than the distance between the arms and fit into the holes. Secure the handle in place by means of a small wooden peg placed through the stick outside the stave arms.

5. Sand all rough edges and apply a coat of stain or, if preferred, apply a coat of gay enamel. If you really want to dress it up, you can apply some of the decorative or humorous decals.

6. As the final touch, line the hod



with kitchen foil to give it a trim appearance and make it easy to keep clean.

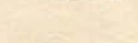
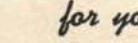
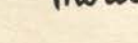
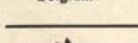
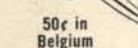
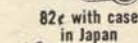
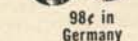
After the picnic season is over, re-

move the foil lining and use the keg as a magazine holder, wastebasket or wood basket for your den fireplace.

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To most people, importing smacks of mystery, romance - and "costly" things for collectors. Actually, any capable and ambitious man or woman, without any previous experience should learn the profitable Home-Import Business quickly. There are thousands of beautifully made imports obtainable at trifling cost abroad to sell in the U.S. by mail order. And, there are also great opportunities exporting U.S. products.

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ported clocks - all by mail order. They cost me only 63¢ and I sell them at a big profit far below the U.S. market - a terrific bargain and a wonderful seller. And, I don't even have to stock them, as they are shipped direct to the buyers from abroad, after I receive the cash.

So you see, it is even possible to conduct a business of this kind without investing in merchandise. You can actually take cash orders, pocket your profits in advance, then order merchandise.

Others following my plan report: ... orders for a total of \$8000.00, writes O. Simcock; have imported Kokeshi Dolls from Japan - J. McDonald; ... sold over 600 Indian Zari purses - M. Bowman; ... wife and I represent four local manufacturers in Export - L. Parry; ... exported large quantity of honey - O. Seymour; ... importing Aztec Indian bird feather pictures from Mexico - F. Balser.

You might ask, "Why do you let others in on your plan? Why don't you keep it all for yourself?" The answer is that the items for import are countless and that the demand for these exotic items is virtually impossible to fill. No one person could possibly handle even a small portion of this gigantic market. There's plenty of business in import-export for you and me and many others.

If you are sincere and really open-minded to a new and different opportunity - one which may change your whole idea of the kind of money you can make full or part time in your own Home-Import Business - write today for full details and a free list of 157 imports, showing the amazingly low foreign prices. Air mail reaches me overnight.

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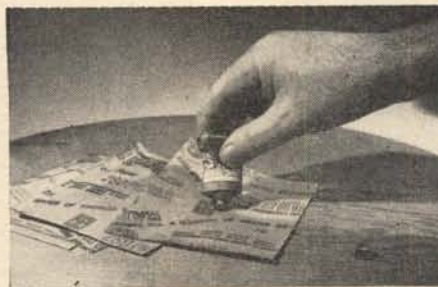
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Maintaining that New Look on Floors

(Continued from Page 20)

time. A rather strong solution of one can of lye to a bucket of water may be used, applied with an old mop. Remember to use rubber gloves and be sure to wear old clothes. Use an old broom or a scrub brush on a handle and scour the floor well. Do a small room at a time or about a half of a large one. Sweep or squeegee the solution off after the finish has been dissolved. Flush with water and dry up with a mop or squeegee off quickly. Literally pour copious amounts of vinegar on the floor and spread out everywhere quickly to neutralize the action of the lye. Although this method is very effective when done properly, I hesitate to recommend it. It is so easy to splatter a wall and also to burn the wood. Be sure the floor is dry before attempting to finish it. Therefore, because of these reasons, I prefer to recommend using the water, oxalic acid, and alcohol method of chemically removing old finishes and at the same time bleaching the floor to a lighter color.

IF YOUR floors are clean enough, but have lost their sheen through too much traffic, it is always possible to add additional coats of finish without attempting to remove the old finish.

Take steel wool and varsol (or paint thinner) and thoroughly remove old, dirty wax as described earlier in the article. This must be done because any remaining wax will prevent the new finish from adhering to the floor. Wax is similar to a grease or oil in this respect. Then use clean soft rags and wipe off all smears left by the dirty varsol left on the floor after drying. Thoroughly vacuum or sweep floors for any powdered wax and bits of steel wool remaining.

Now apply either shellac or varnish one or two coats as desired. Be sure to hand sand with No. 0 sandpaper after each coat of finish has dried. Finally apply wax and polish.

Ordinary paint remover is too messy and laborious to use to remove old finish. However, a new type of paint remover can be applied and then washed off with water. Although I have never used it on a floor, it should prove very adequate for the job.

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ture, and the grooves left by pianos all testify to the need for the efficient and proper maintenance of wood floors. Remember:

Never—Use water to scrub wood floors (except as directed in article).

Never—Use a water base wax.

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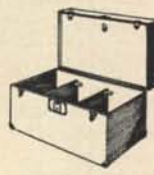
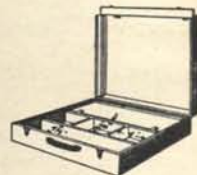


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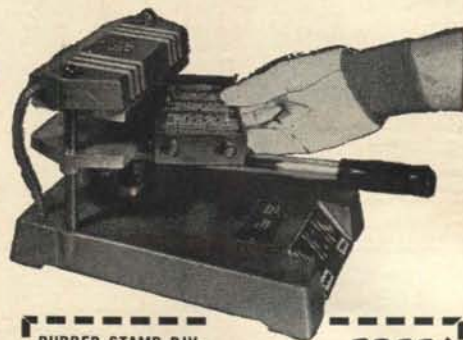
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What about Spray Can Painting?

TED MORGAN

ORIGINALLY REGARDED as a novelty, push button painting as accomplished with a spray can has come to be accepted by many a do-it-yourselfer as a convenient and efficient means of doing many a paint job around the house and in the workshop.

For those not familiar with this type of painting and for those who have used it successfully but would like to achieve even better results, we prepared a list of questions and submitted them to experts of a large paint manufacturer (the Glidden Company). The questions and their answers follow:

What makes it spray? About half the contents of the spray container consist of liquid gas in solution with the paint. At 70 degrees F. the pressure on the inside of the can is about 35 to 38 pounds a square inch. When the push button valve is released, the liquid gas is vaporized and the resulting internal pressure forces out the paint-liquid gas solution. The gas vaporizes instantly in the free air and the wet paint particles are deposited as a film.

What about clogging? A properly formulated paint-gas solution should be virtually free from any tendency to clog the valve on the spray container. However, to prevent the paint from hardening and obstructing the pin-hole opening in the valve, certain simple precautions should be observed.

If a spraying operation is to be interrupted for more than 10 minutes, completely invert the can, press the valve button and hold it down until a jet of clear gas passes through the valve. Thus the valve will be self-cleaned and always in operating order. If you neglect to do this and the paint does harden in the valve, pull off the plastic valve head and apply a drop or two of lacquer thinner to the head and valve stem. The pressure, when released, will then generally drive out the softened paint.

How about settling? To a degree, nearly all paints settle. After prolonged storage there will be a layering of the various pigments, oils, resins and gases in the spray container. But every spray can contains a small agitator ball which, when shaken vigorously, aids in stirring up the paint components. The spray can should not be used until the ball is entirely free and can be heard rattling inside the can.

Can all the paint be used? The container holds more than a sufficient supply of gas to spray its entire contents. Sometimes, however, a person inexperienced in using a spray can will try to use it in the wrong position and only clear gas will come out. This can be corrected by turning the plastic valve-head a half turn and the siphon tube will then be in a position to drain the contents of the can.

How much skill is needed for good results? In order to get the "feel" of spray can painting, a little practice will often help. The valve should be held no closer than 10 or 12 inches from the surface of the work. Move the can with short, fast strokes. Don't pile up the paint in one spot or move the spray too slowly, or runs, sags and wrinkling may result. Allow the surface to become slightly tacky between light mist coats; apply several of those coats rather than one or two heavy ones. Be sure that the valve is completely opened.

What surfaces can be painted? Spray can paints are designed for both interior and exterior use. They can be applied to wood and metal surfaces. If other types of surfaces such as plastic or glass are to be coated, you'll be smart to coat a small portion of such surfaces and observe the results after the normal drying period. Whatever surface is to be sprayed, be sure it is free from grease, rust, dust and wax.

How far will the paint go? The coverage is controlled by several factors: the color itself, the type of surface, the thickness of the coat to be applied and the skill of the painter. Spray can painting is particularly effective for touch-up jobs, the painting of small or intricate objects, hard-to-reach places, etc.

What about storage? Bear in mind that gas temperatures increase at a rapid rate as the temperature rises. All spray cans are tested in 130-degree temperatures but in practice should never be exposed to temperatures of over 120 degrees F. Don't expose them in sunny windows, in back window shelves of motor cars, etc.

What fundamental safety precautions are necessary? Most spray paints are flammable, so be extremely careful in their use around open flame. Use caution in disposing of empty cans. Never place them in an incinerator or throw them on a trash fire, as residual gas may burst the can and cause injury. Never puncture a spray can.

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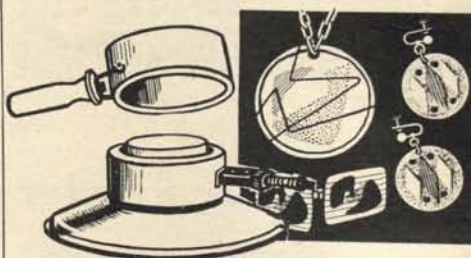
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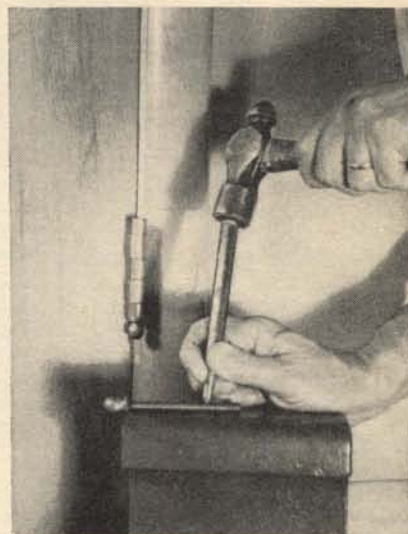
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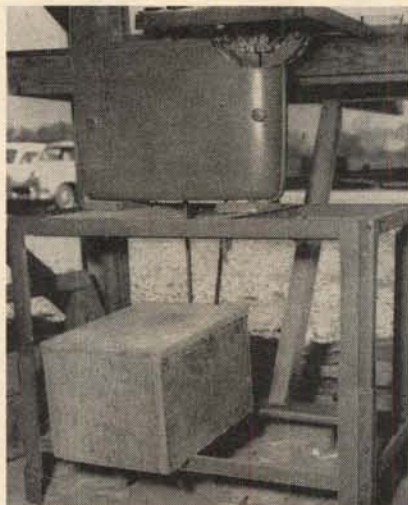
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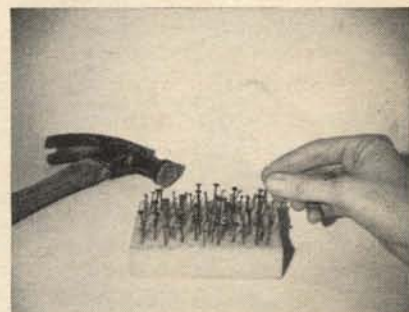


Wooden Hood For Saw's Motor



Motors that drive saws of any type usually collect more than their share of sawdust, some of it seeping into bearings and oil cups, shortening the motor's life. A simple box-like hood, fashioned of wood, to fit your particular motor, as shown, will keep the motor clean and free of dirt. The box need be lifted only when motor is oiled. —Grover Brinkman.

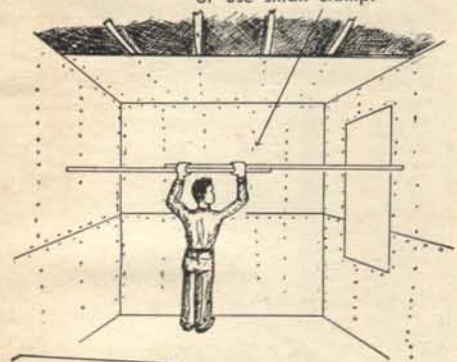
For Easy Nail Selection



If you find it inconvenient selecting nails from an assortment when working on a project, here is a handy solution: Use a plastic sponge as a "nail cushion" to hold the nails. If you keep various size and types of nails in the sponge, you can select the ones you need more readily than if they were in a box or other container. A small amount of linseed oil applied to the sponge every now and then will facilitate driving the nails into hard woods. —John A. Comstock

Handy Measuring Sticks

Hold two measuring sticks in place with your bare hands, or use small clamp.



Place measuring sticks on sheet rock, plaster board for exact measure.

Anyone who has needed to figure room widths when applying wall-boards and has known the frustration of measuring distances overhead unaided, using a steel tape or wooden rule which twists and bends, making it hard to make an accurate measurement, will welcome this suggestion:

Take two sticks (one-by-one's or one-by-two's preferably) of lengths varying from 8 to 10 feet, and spread them the width to be measured, holding them at their ends, so that you grip the pieces together when the ends of each stick touch the walls. This will be the exact measurement at any given part of the room.

Once you have made your measurement, you may either hold the stick ends tightly with your hands, or better still, affix a small steel clamp and tighten securely. Then move the sticks to your wallboard and mark to cut.

Thomas P. Ramirez

Handy Car Accessory From Old Broom

When your kitchen broom has outlived its usefulness you can easily extend its life and provide yourself with an extremely handy accessory for your car or truck. Cut off several inches of the broom bristles to straighten and even them. Next, cut approximately a foot off the end of the broom handle so that you can use the broom inside the car. The broom bristles may be quickly cut with any type power saw or clipped with scissors. This short-handled broom will fit under the front seat of almost any car and it will be found useful in cleaning the car's upholstery and carpet. You will also find it handy to have in the event you have to make a roadside repair requiring work under the car. It's a useful lever and an extension handle.—Glen F. Stillwell

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- If your signal lasts longer than two weeks, go to your doctor to learn if it means cancer.

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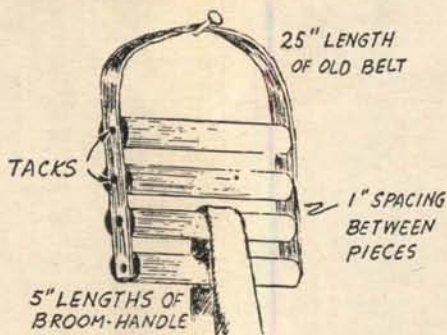
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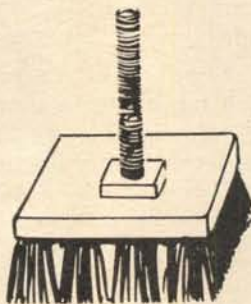
John A. Comstock

To Fill Scratches On Furniture

When finishing or refinishing furniture, gouges and scratches can be neatly hidden by using the sanding dust from the same piece, mixed with clear varnish, lacquer or nail polish. Make a paste as thick as possible (to prevent shrinking) force into crack or gouge, when dry sand smooth. Then finish piece.

H. B. Monroe

Improved Polishing Brush



A useful polishing or light abrasive brush for use in the drill press or electric drill can be made from a fiber bristle scrub brush. Saw off a block of the brush to include about 16 tufts of bristles and round the corners with a band saw or coping saw. Then bore a hole through the center of the block and insert a 1/4" x 3" stove bolt from the under side, fixing it with a nut on the upper side. This furnishes a shank that can be held by the chuck of the drill press or electric drill.—*M. W. Lowry*

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